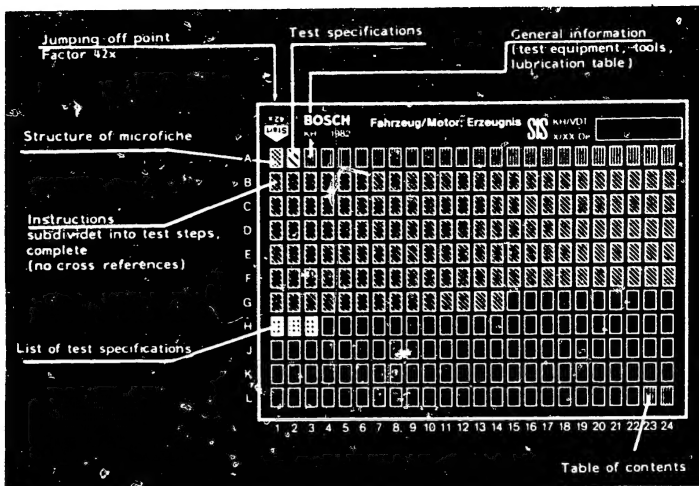


Structure of microfiche



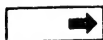
1. Read from left to right

2. Title of microfiche (appears on each coordinate)

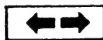
E 16	Product/assembly/test step	
	Vehicle/engine	

Coordinate

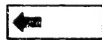
3. Limits of section



Beginning



Mid-section



End



One-page
section

4. References to relevant test steps in
test specifications; coordinate e.g. C6

C6

A1

Testing and adjustment



1. Test specifications

For test specifications see microfiche

List of test specifications W-237/1000

and microfiche

Test specifications for ignition distributors W-237/1001...

We must in this case refer to Coordinate H1 since, owing to the vast number of test specifications, it is not possible to present them here as is usually the case in the SIS system.

In the list of test specifications the Part No. of your ignition distributor is followed by the microfiche number and the Coordinates on which you can find the appropriate test specifications.

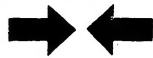
The new test specifications must only be used together with the new distributor test bench ZVS 50 (0 683 400 200) and distributor test adapter KDZV 7202.

Reason: The advance curves have been matched to this equipment.

A2

Test specifications

Ignition distributors 0 237 ..., ZV-I



2. Test equipment and tools required for repair

1 Clamping fixture	KDZV 7221
1 Centering ring	KDZV 7222
1 Centering ring (for pointed-tooth generator)	KDZV 7223
1 Circlip pliers	commercially available
2 Screwdrivers	commercially available
1 Drift >2 mm diameter	commercially available
1 Hexagon-socket-screw key 2.5 mm	commercially available
1 Hexagon-socket-screw key 3.0 mm	commercially available

2.1 Test equipment and tools required for testing

Distributor test bench ZVS 50	0 683 400 200
Distributor test adapter	KDZV 7202
Distributor tester adapter accessories	KDZV 7203 KDZV 7204 KDZV 7205 KDZV 7209 KDZV 7210 KDZV 7211 KDZV 7212
Tachometer e.g. KTE 001.03	0 684 400 103
Measuring oscilloscope (with probe 1 : 1) e.g. Hameg	commercially available
Voltage stabilizer e.g. Gossen 12 V/10 A	commercially available
Battery 12 V 84 A (charged) e.g.	0 183 058 411
Ohmmeter e.g. ETE 014.00	0 684 101 400
Contact feeler gauge or feeler gauge (0.05...1mm)	KDZV 7399 commercially available
Adjustment throttle (without pressure gauge)	1 688 130 132
Pressure gauge 0 ... 1.6 bar, Quality class 1.0, 0.05 graduations (e.g. Wika Type 211, 160.1, 6 - Part No. 4184)	



Note: The pressure gauge and the setting throttle are frequently already part of the workshop equipment and are used for checking the manifold-pressure compensator on diesel fuel-injection pumps.

A4

Test equipment, tools

Ignition distributors 0 237, ZV-I



3. Lubricants

Plain-bearing grease	Part No.
VS 14060 Ft 250g can	5 964 520 125
Silicone paste	
Ft 2 V 4 50g tube	5 700 083 005
Special oil	
OI 1 V 13 0.5l can	5 962 260 605
Heat-conductive paste	
30 g tube	5 964 860 003
<u>3.1 Lubrication table</u>	

General

The following exploded views show the points which must be treated with the stated lubricants or with thermal-conduction paste.

Pay particular attention to footnotes.

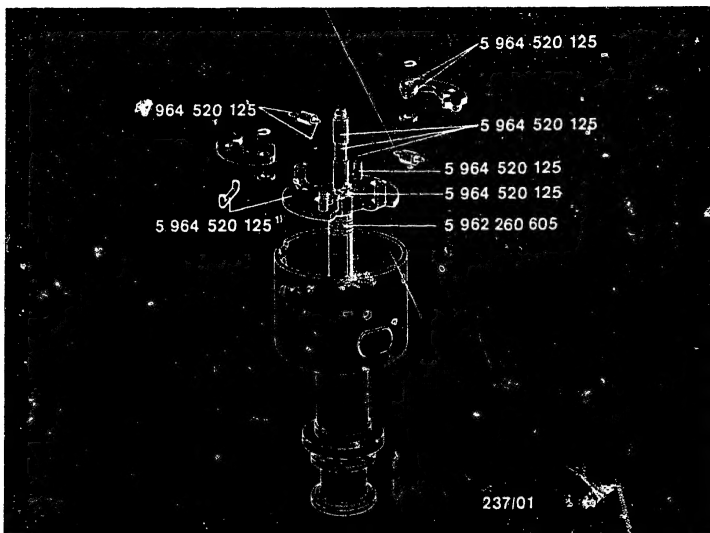
The exploded views cannot be used for the assembly of ignition distributors (incomplete).

A5

Lubrication table

Ignition distributors 0 237..., ZV-I





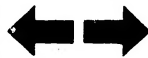
Lubrication points and lubricants on centrifugal advance mechanism

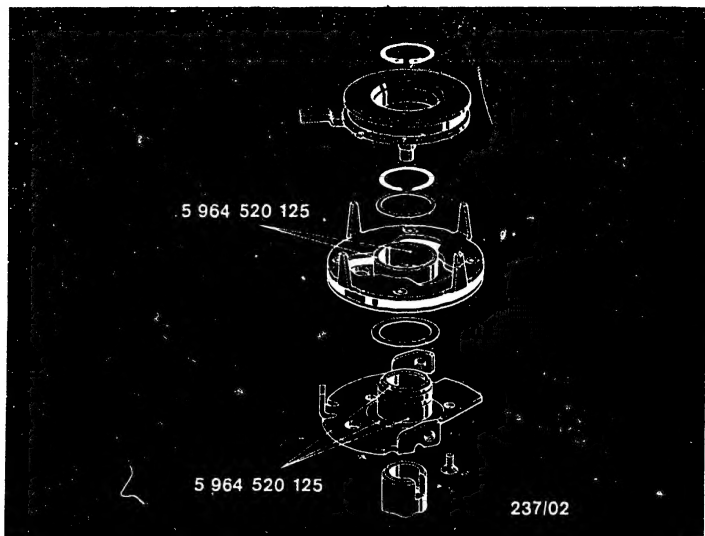
- 1) Grease the plastic rubbing block and the bearing surface on the shaft plate.

A6

Lubrication table

Ignition distributors 0 237..., ZV-I





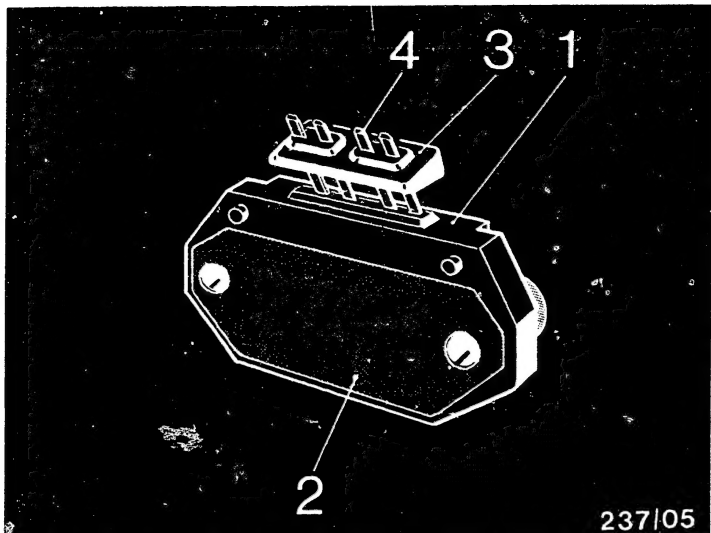
Lubrication points and lubricants on ignition pulse generator

A7

Lubrication table

Ignition distributors 0 237 ..., ZV-I





237/05

1 = Trigger box
2 = Base plate

3 = Rubber seal
4 = Blade terminal

Ignition distributor with built-on trigger box - (older version) - apply thermal-conduction paste.

To guarantee good heat dissipation, the base plate (2) of the trigger box (1) must be coated with thermal-conduction paste before being mounted on the ignition distributor.

To prevent the danger of shunts at the blade terminals, the rubber seal must be coated with thermal-conduction paste on the surface which is in contact with the ignition distributor.

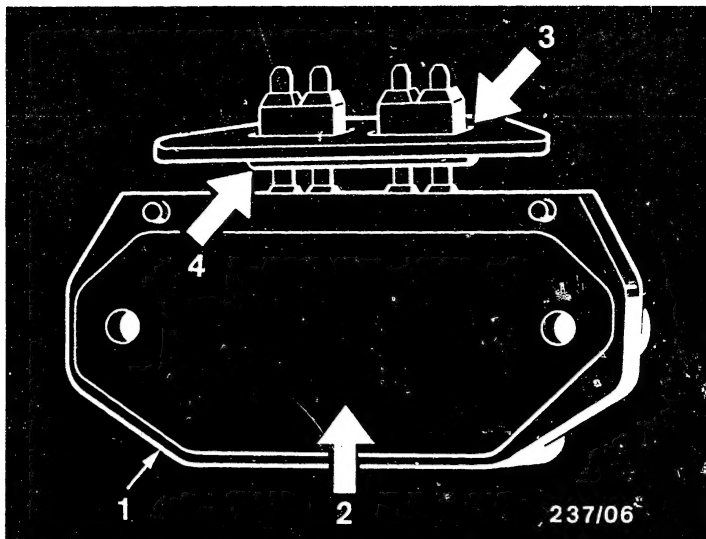
Apply thermal-conduction paste only with a suitable object (screwdriver, matchstick etc). Do not apply thermal-conduction paste to painted parts.

A8

Lubrication table

Ignition distributors 0 237 ..., ZV-I





1 = Trigger box
2 = Base plate

3 = Grease chamber on top
side of rubber seal
4 = Grease chamber on bottom
side of rubber seal

Ignition distributor with built-on trigger box (newer version) - apply thermal-conduction paste.

To guarantee good heat dissipation, the base plate (2) of the trigger box (1) must be coated with thermal-conduction paste before being mounted on the ignition distributor.

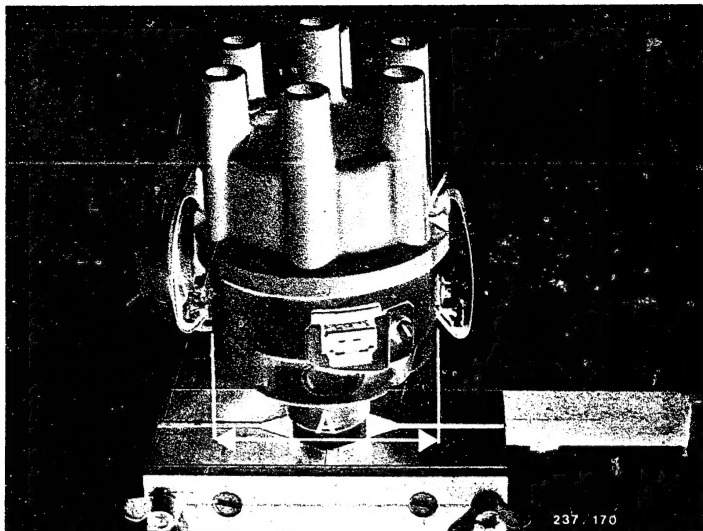
In addition, fill the grease chambers (3) and (4) with thermal-conduction paste. Apply thermal-conduction paste only with a suitable object (screwdriver, matchstick etc). Do not apply thermal-conduction paste to painted parts.

A9

Lubrication table

Ignition distributors 0 237 ..., ZV-I





A = Housing diameter

4. Repairing the ignition pulse generator

4.1 Determining the size

Ignition distributors are available at present in 3 sizes.

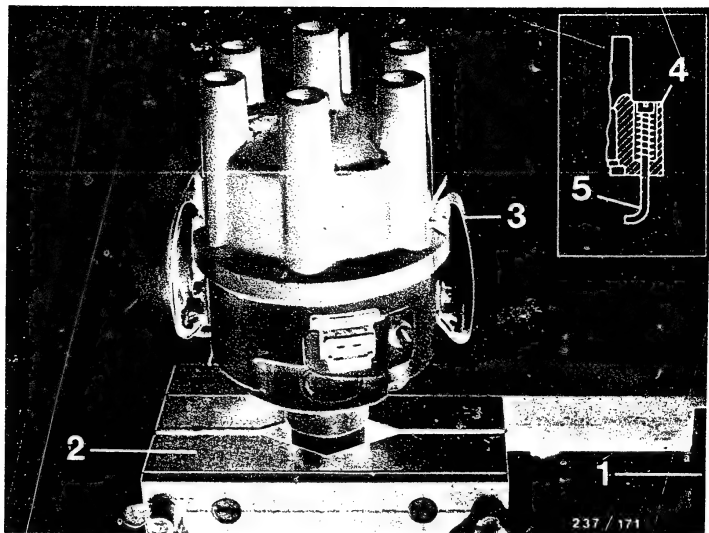
The distinguishing feature is the housing diameter.
Example: 80/90 mm diameter (see picture).

B1

Repair, determining the size

Ignition distributors 0 237..., ZV-I





- | | |
|----------------------|---------------------|
| 1 = Vise | 3 = Holding spring |
| 2 = Clamping fixture | 4 = Distributor cap |
| | 5 = Retaining pin |

4.2 Removing the pulse generator

Clamp the ignition distributor with clamping fixture in a vise.

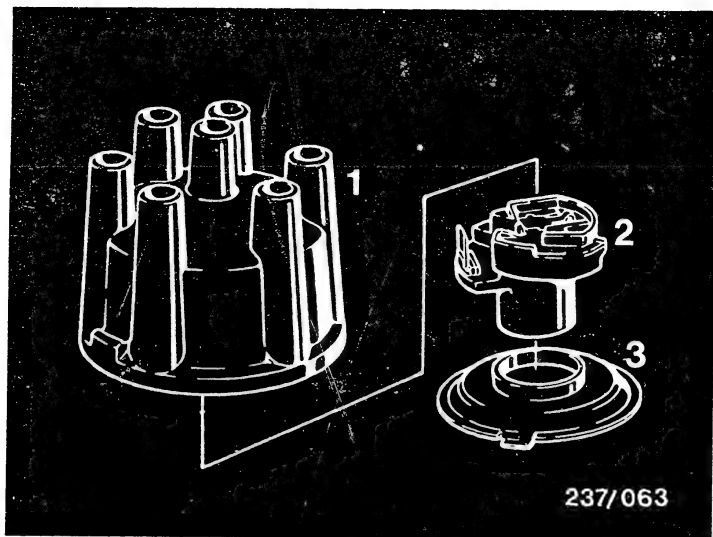
Caution: If clamped without a clamping fixture, the distributor (bearing bushing) will be damaged. Using a screwdriver, release the holding springs or retaining pins from the distributor cap.

B2

Removing the pulse generator

Ignition distributors 0 237..., ZV-I





237/063

- 1 = Dust-protection cover
- 2 = Distributor rotor
- 3 = Distributor cap

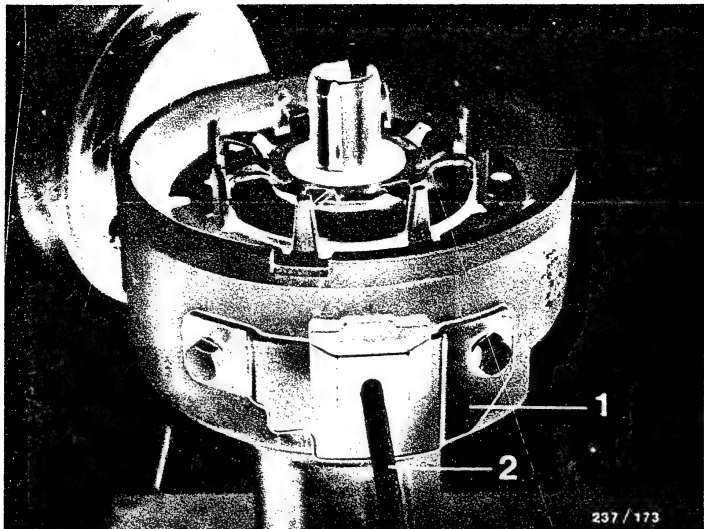
Remove the distributor cap, distributor rotor and dust-protection cover.

B3

Removing the pulse generator

Ignition distributors 0 237..., ZV-I





- 1 = Retaining bracket
2 = Electric leads

Remove the electric lead.

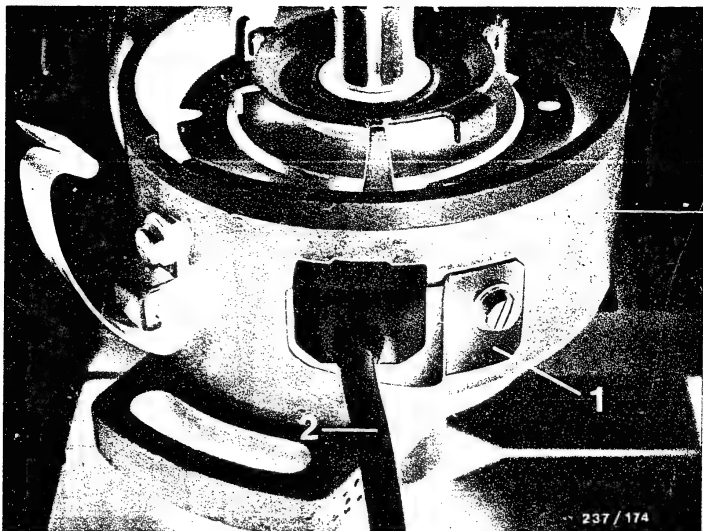
If installed: Unscrew screws from retaining bracket.
Take off retaining bracket.
Carefully remove electric lead (clipped into pulse generator) from ignition distributor housing or pulse generator with a screw driver (press).

B4

Removing the pulse generator

Ignition distributor 0 237 ..., ZV-I





- 1 = Retaining bracket
2 = Electric lead

Further version of an electric lead

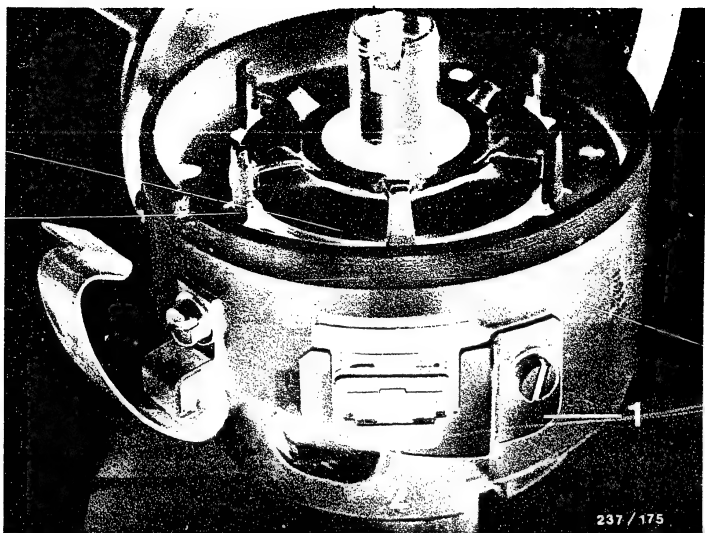
If installed: Unscrew screw from retaining bracket.
Remove retaining bracket.
Using a screwdriver, carefully remove the electric lead (latched into the pulse generator) from the distributor housing/pulse generator (press).

B5

Removing the pulse generator

Ignition distributors 0 237 ..., ZV-I





1 = Retaining bracket
2 = Socket

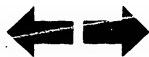
Remove the socket

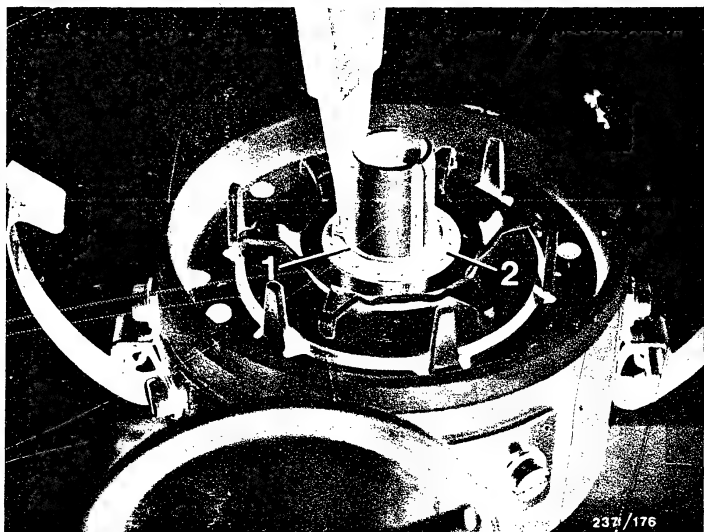
If installed: Unscrew screw from retaining bracket.
Remove retaining bracket.
Withdraw socket horizontally.
Pay attention to rubber seal in socket (can get lost).

B6

Removing the pulse generator

Ignition distributors 0 237 ..., ZV-I





- 1 = Retainer
- 2 = Tooth lock washer

Remove the upper retainer using pliers.

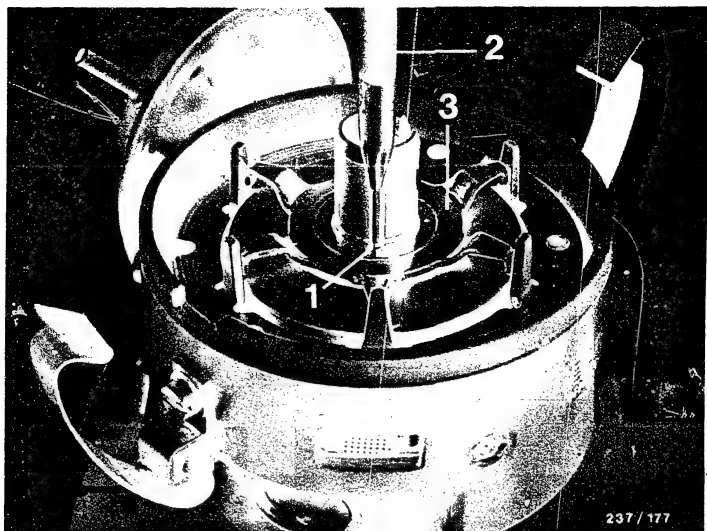
If installed: Remove tooth lock washer or corrugated washer (corrugated washer not shown).

B7

Removing the pulse generator

Ignition distributors 0 237 ..., ZV-I





- 1 = Straight pin
- 2 = Drift
- 3 = Trigger wheel

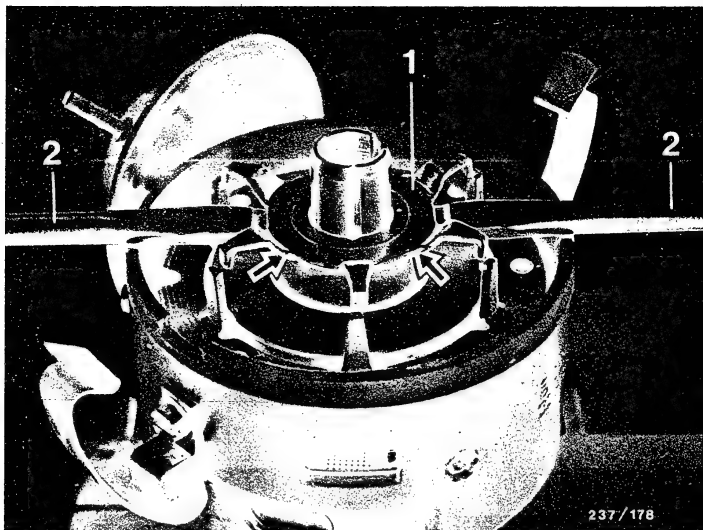
Drive the straight pin downward with a drift approx. 0.5 mm.

Note: This makes it easier to remove (lever off) the trigger wheel.

B8

Removing the pulse generator
Ignition distributors 0 237..., ZV-I





1 = Trigger wheel
2 = Screwdriver

Lever off the trigger wheel with 2 screwdrivers. Apply the screwdrivers on the inside of the trigger wheel (greater stability).

If stiff, give the straight pin another slight tap downward.

Remove the loose straight pin from the ignition distributor (pulse generator).

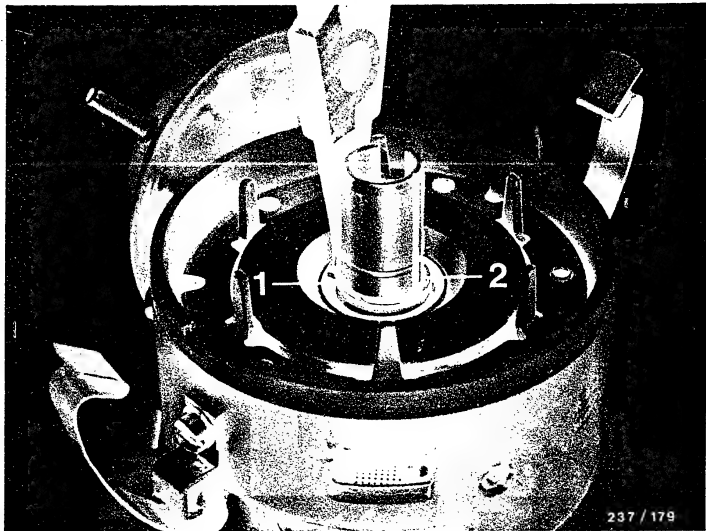
Demolish the trigger wheel and scrap.

B9

Removing the pulse generator

Ignition distributors 0 237..., ZV-I





- 1 = Retainer
2 = Plain washer

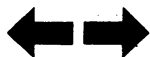
Remove the plain washer (resting on retainer).

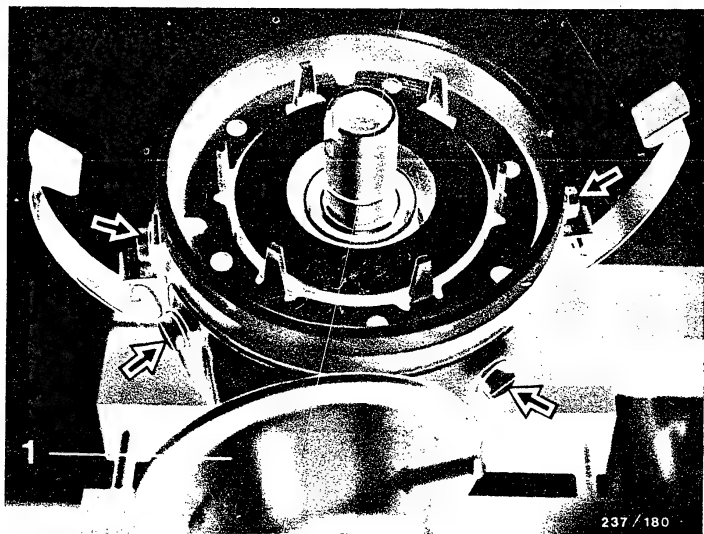
Remove the lower retainer with pliers.

B 10

Removing the pulse generator

Ignition distributors 0 237 ..., ZV-I





1 = Vacuum advance mechanism

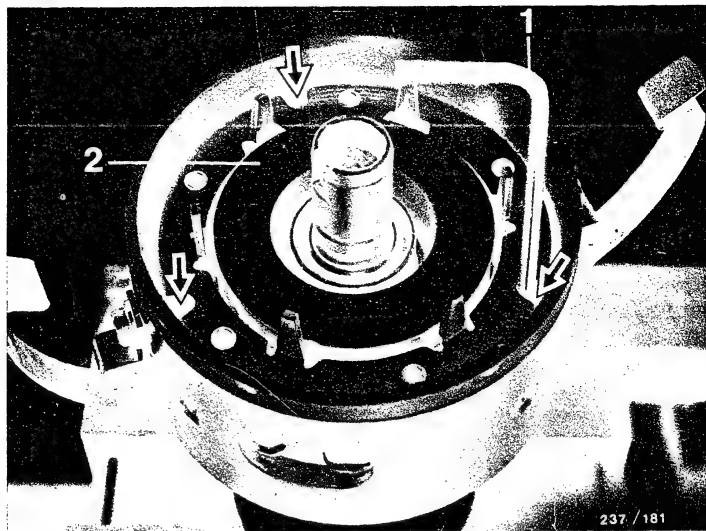
Unscrew screws from holding springs (only on distributor with 80 mm housing diameter) and vacuum advance mechanism (see arrows).

Withdraw vacuum advance mechanism downward out of distributor housing.

B11

Removing the pulse generator
Ignition distributors 0 237 ..., ZV-I





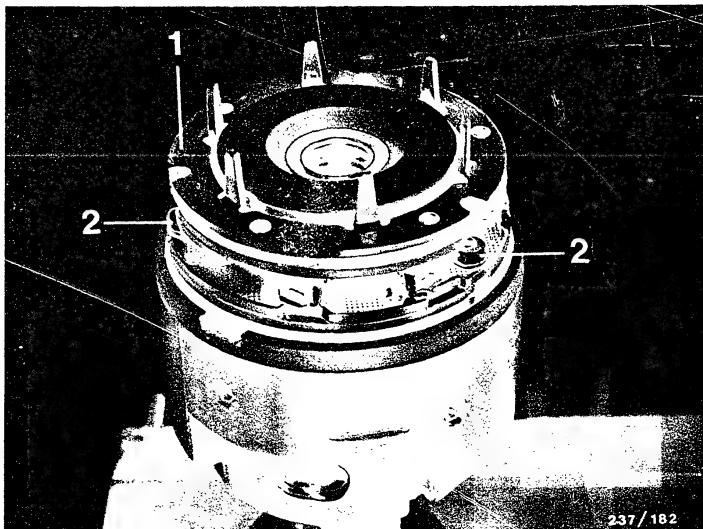
- 1 = Hexagon-socket-screw key
2 = Pulse generator

Loosen 3 hexagon-socket-head cap screws (see arrows) using hexagon-socket-screw key (screws remain in pulse generator).

B12

Removing the pulse generator
Ignition distributors 0 237 ..., ZV-I





1 = Pulse generator

2 = Hexagon-socket-head cap screw

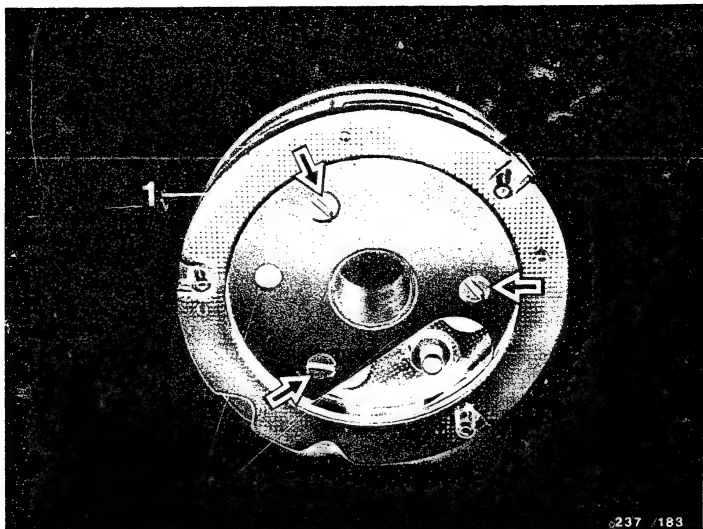
Withdraw the pulse generator from the top.

B 13

Removing the pulse generator

Ignition distributors 0 237 ..., ZV-I





1 = Underside of pulse generator

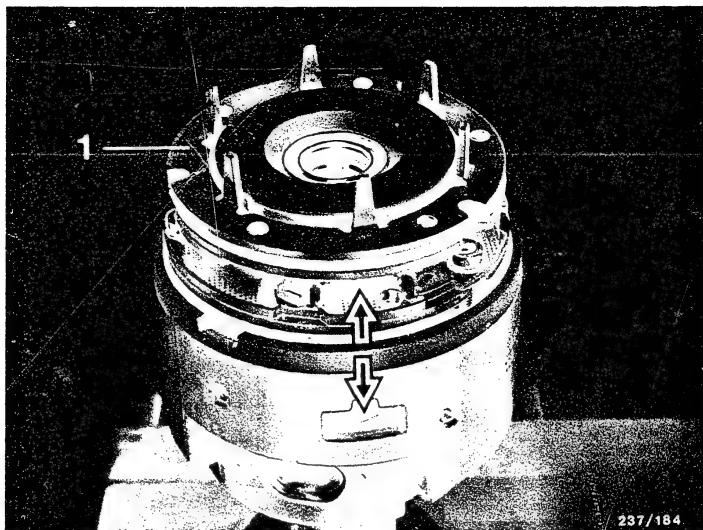
After removing the 3 flat-head screws (arrows) it is possible to remove the coil section.

B14

Removing the pulse generator

Ignition distributors 0 237..., ZV-I





1 = Pulse generator

4.3 Installing the pulse generator

Install the pulse generator in the distributor housing.

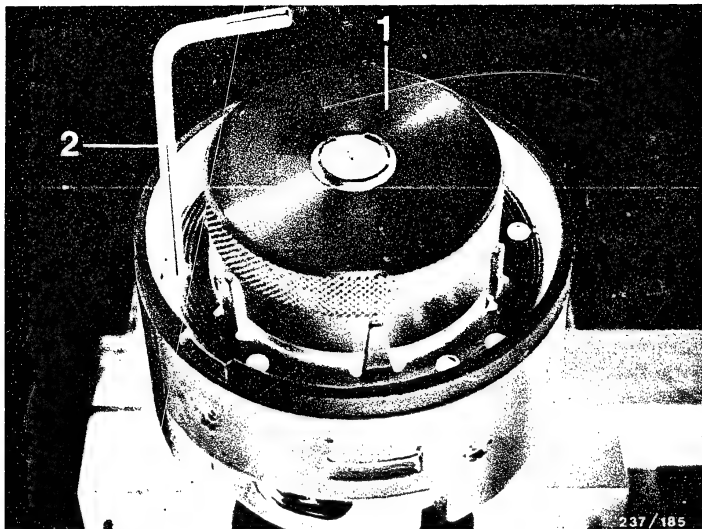
Installation position: Electric terminal of pulse generator points toward recess in distributor housing (see arrow).

B15

Installing the pulse generator

Ignition distributors 0 237 ..., ZV-I





- 1 = Centering ring KDZV 7222
2 = Hexagon-socket-screw key

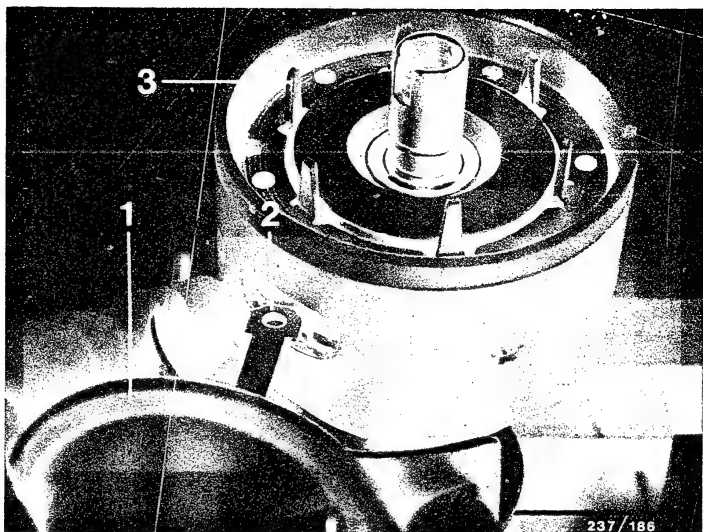
Insert the centering ring.
Position the fastening screws of the pulse generator
and tighten uniformly.

Remove the centering ring.

B 16

Installing the pulse generator
Ignition distributors 0 237. ..., ZV-I





- 1 = Vacuum advance mechanism
- 2 = Tie rod
- 3 = Teeth of pulse generator

In 80 mm dia. ignition distributors turn the teeth of the pulse generator against the direction of rotation of the distributor as far as they will go and hold there.

Introduce the vacuum advance mechanism into the distributor housing and hook the tie rod into the pulse generator bearing pin.

Before screwing it down, move the vacuum advance mechanism to and fro and check whether the teeth of the pulse generator move.

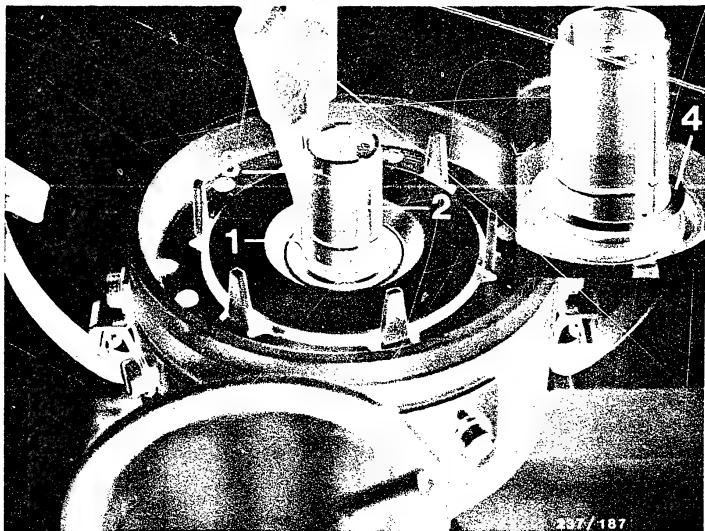
Position the fastening screws of the vacuum advance mechanism and the holding springs (only in ignition distributors with 80 mm housing diameter) and tighten.

B17

Installing the pulse generator

Ignition distributors 0 237 ..., ZV-I





1 = Retainer

2 = Rotor sleeve groove

3 = Rotor sleeve

4 = Plain washer

Install the lower retainer with the opening at 180° to the rotor sleeve groove.

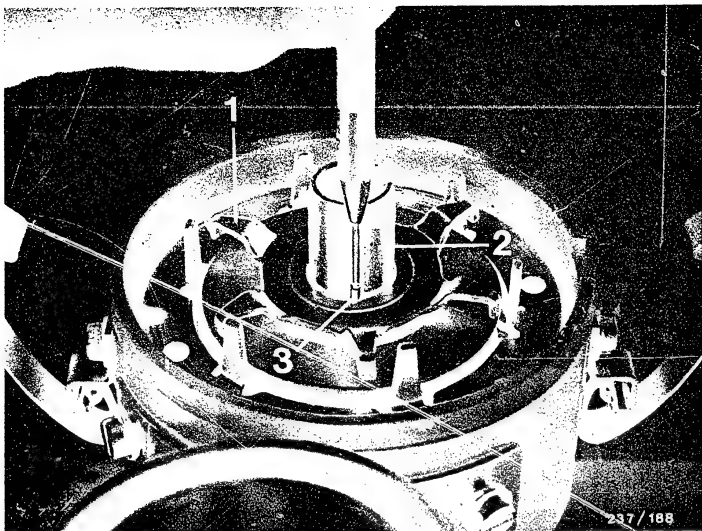
Caution: Make sure that the retainer is latched in position all the way round.

Important: Slip the plain washer onto the rotor sleeve.

B18

Installing the pulse generator
Ignition distributors 0 237 ..., ZV-I





1 = Trigger wheel
2 = Rotor sleeve

3 = Straight pin

Install the new trigger wheel and push down as far as it will go.

Bring the groove of the trigger wheel and the rotor sleeve into alignment.

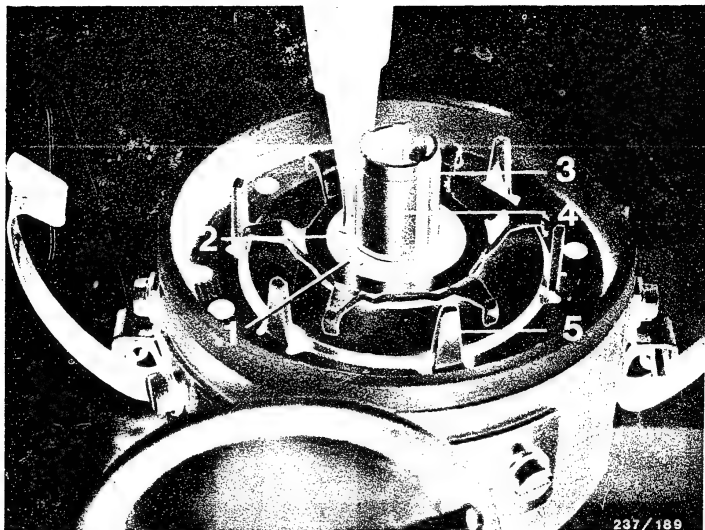
Introduce straight pin into groove and drive in using a drift until the straight pin is flush with the trigger wheel.

B 19

Installing the pulse generator

Ignition distributors 0 237 ..., ZV-I





237/189

- | | |
|-------------------------|---------------------|
| 1 = Tooth lock washer | 4 = Rotor sleeve |
| 2 = Retainer | 5 = Pulse generator |
| 3 = Rotor sleeve groove | |

If installed: Slip tooth lock washer or corrugated washer onto rotor sleeve (corrugated washer not shown). Install the upper-retainer with the opening at 180° to the rotor sleeve groove.

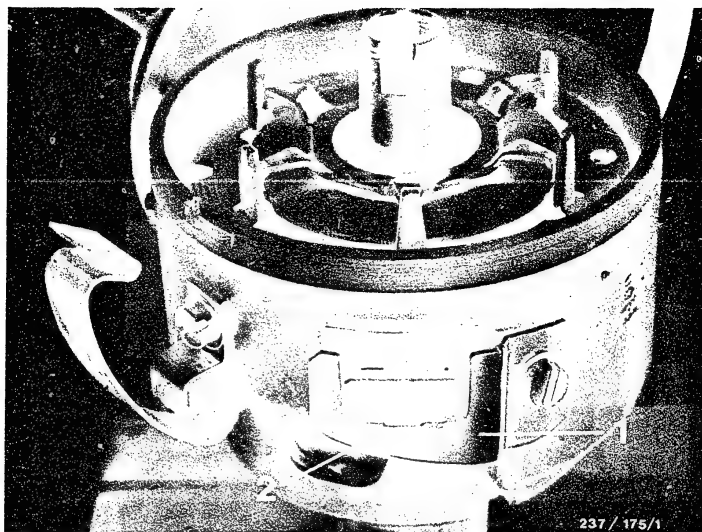
Caution: Make sure that the retainer is latched in position all the way round.

Turn the distributor shaft by hand.
The trigger wheel must not brush against the pulse generator.

B20

Installing the pulse generator
Ignition distributors 0 237 ..., ZV-I





- 1 = Retaining bracket
2 = Socket

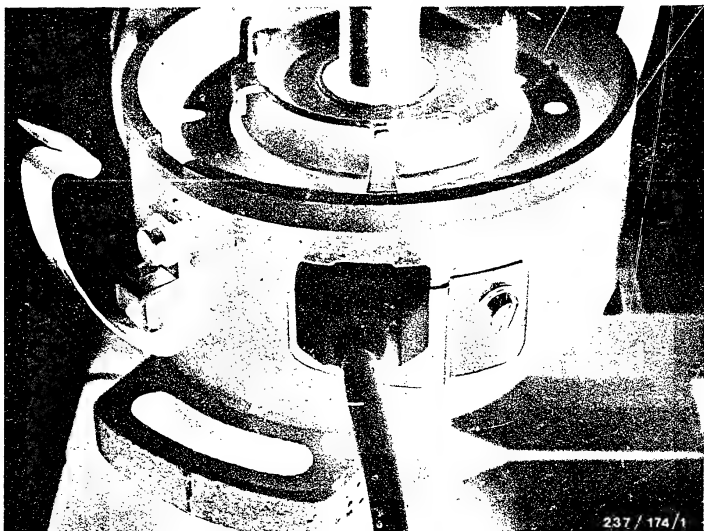
Mount the socket.

Insert the socket into the distributor housing. Pay attention to rubber seal in socket. If installed:
Screw on retaining bracket.

B21

Installing the pulse generator
Ignition distributors 0 237 ..., ZV-I





- 1 = Retaining bracket
- 2 = Electric lead

Fit electric lead.

Insert the electric lead into the socket.

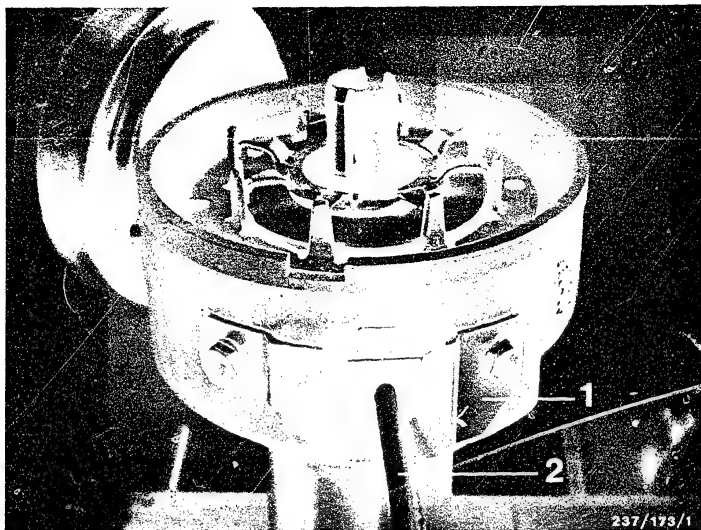
If installed: screw on the retaining bracket.

B22

Installing the pulse generator

Ignition distributors 0 237 ..., ZV-I





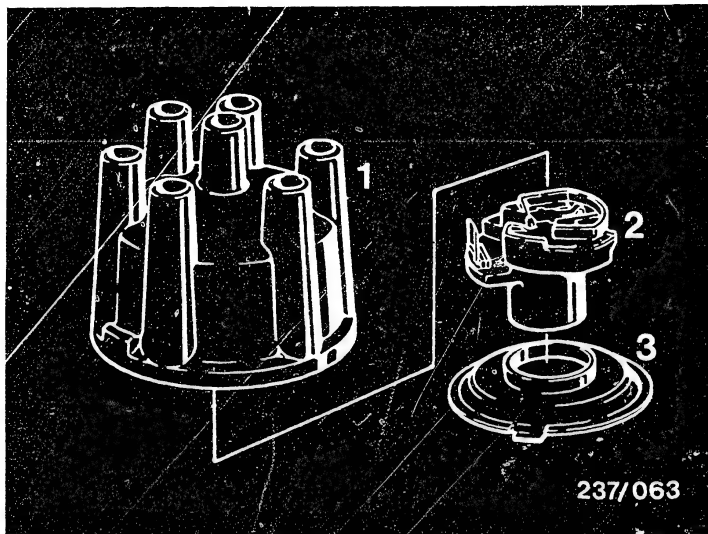
- 1 = Retaining bracket
2 = Electric lead

Further version of an electric lead.
Insert the electric lead in the socket.
If installed: Screw on the retaining bracket.

B23

Installing the pulse generator
Ignition distributors 0 237 ..., ZV-





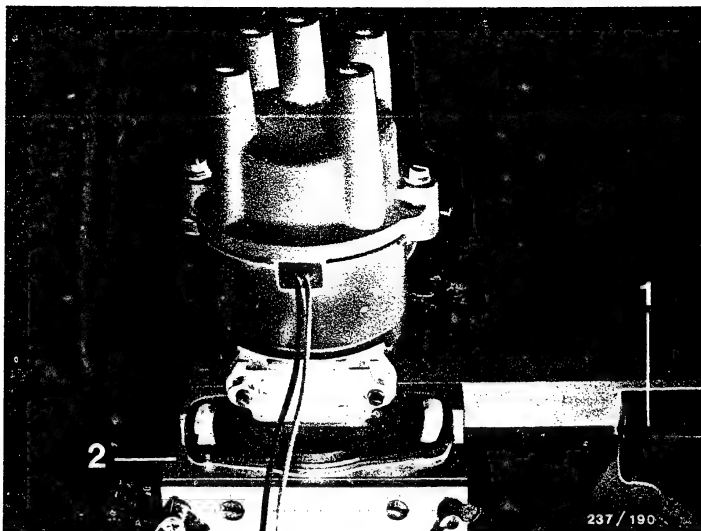
- 1 = Distributor cap
- 2 = Rotor
- 3 = Dust-protection cover

Mount dust-protection cover, rotor and distributor cap.

B24

Installing the pulse generator
Ignition distributor O 237..., ZV-I





1 = Vise

2 = Clamping fixture

5. Repairing the pulse generator - distributor with tapered-tooth generator

5.1 Removing the pulse generator

Clamp the ignition distributor by hand in the clamping fixture.

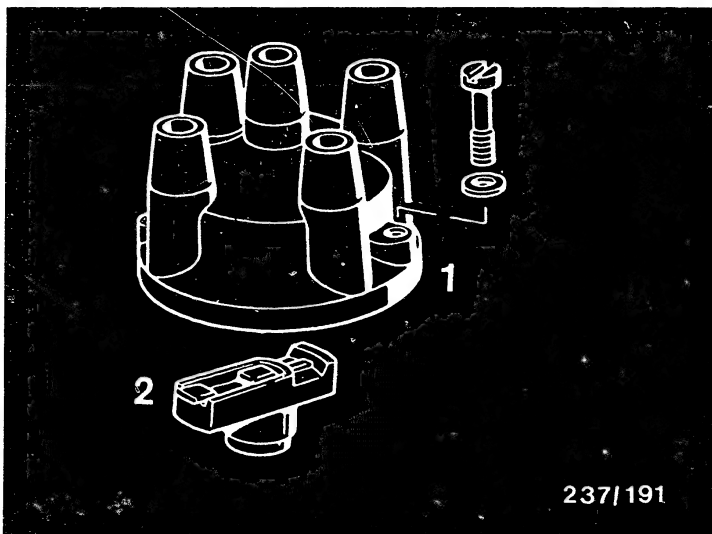
Caution: If clamped without a clamping fixture, the ignition distributor (bearing bushing) will be damaged.

C1

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237...,ZV-I





237/191

- 1 = Distributor cap
2 = Distributor rotor

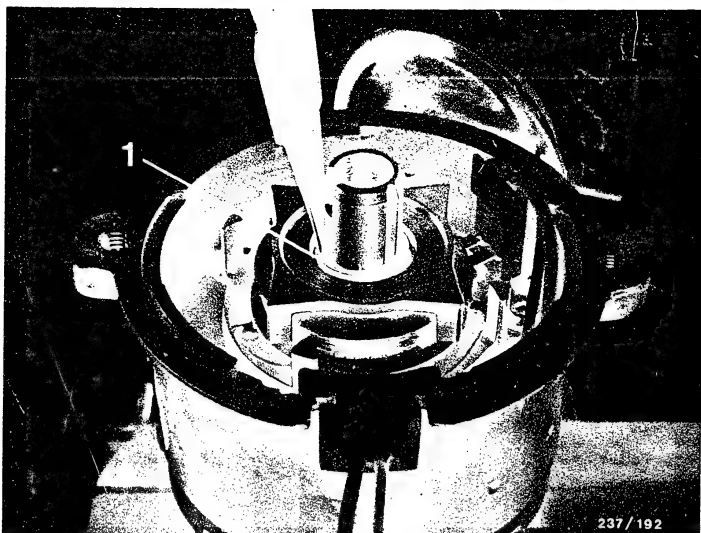
Loosen screws in distributor cap with screw driver.

Remove the distributor cap and the distributor rotor.

C2

Removing the pulse generator
Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Retainer

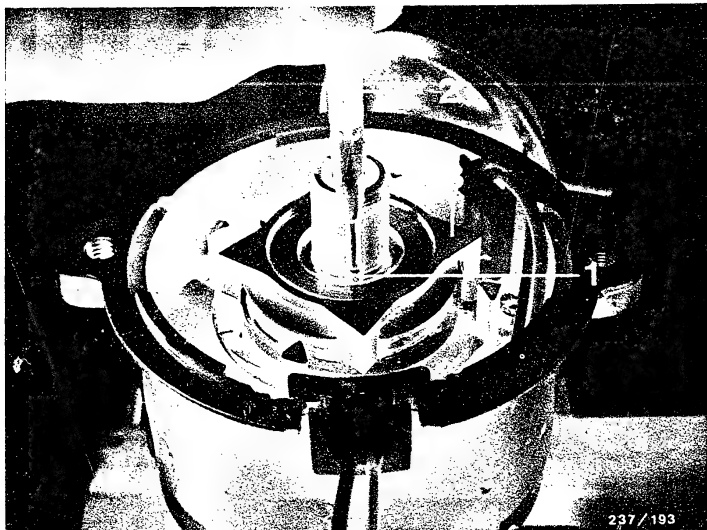
Remove upper retainer with pliers.

C3

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





- 1 = Straight pin
- 2 = Drift
- 3 = Trigger wheel

Drive the straight pin downward with a drift approx. 0.5 mm.

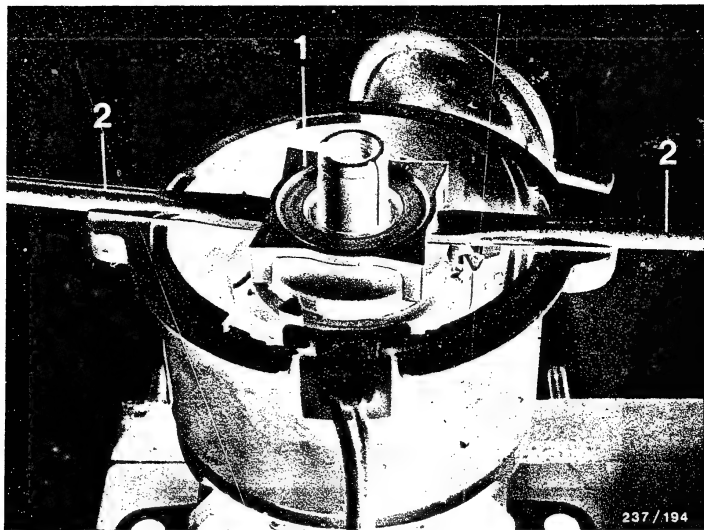
Note: This makes it easier to remove (lever off) the trigger wheel.

C4

Removing the pulse generator

Ignition distributors 0 237... , ZV-I





1 = Trigger wheel
2 = Screwdriver

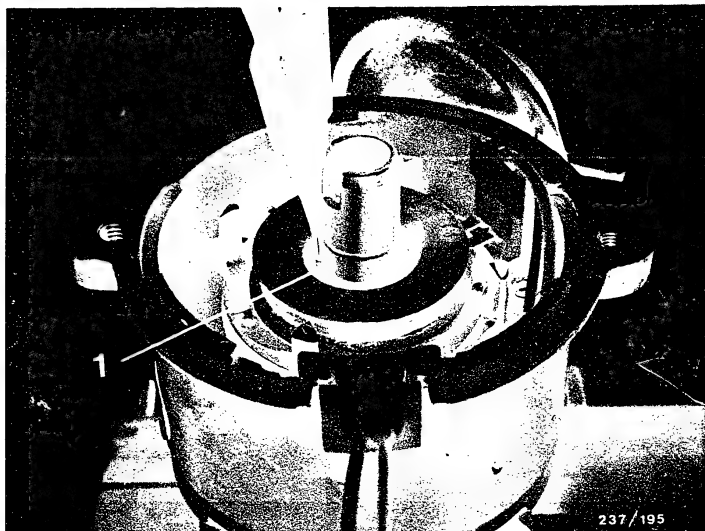
Using 2 screwdrivers, lever off the trigger wheel. Apply the screwdrivers to the inside of the trigger wheel (greater stability).
If stiff, tap the straight pin downward once again. Remove the loose straight pin from the ignition distributor (pulse generator).
Demolish the trigger wheel and scrap.

C5

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Retainer

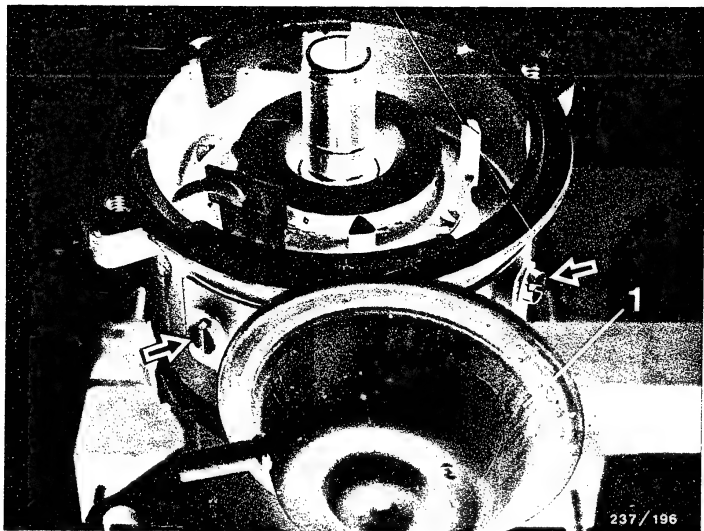
Remove the lower retainer using pliers.

C6

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Vacuum advance mechanism

Remove the screws of the vacuum advance mechanism (arrows).

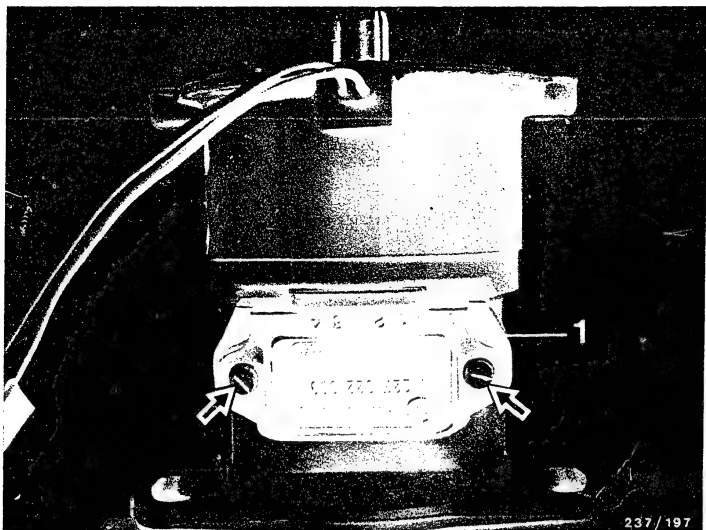
Pull the vacuum advance mechanism downward out of the distributor housing.

C7

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Trigger box

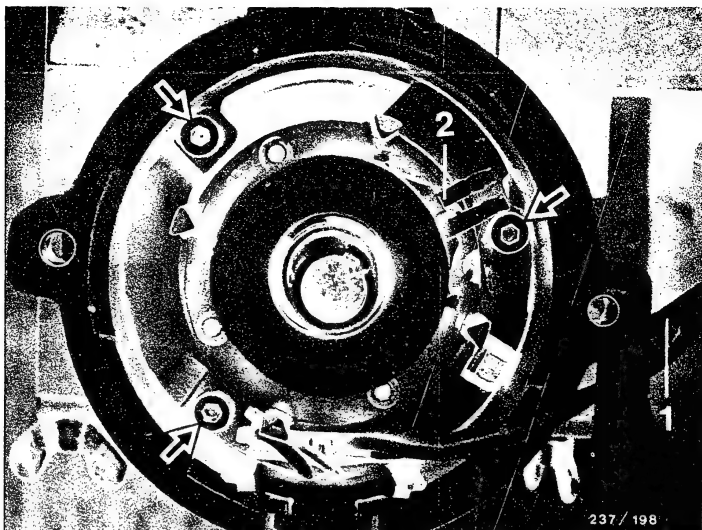
Remove the fastening screws of the trigger box (arrows).
Withdraw the trigger box from the bottom out of the
distributor housing.

C8

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





- 1 = Two-pin plug
2 = Coil section

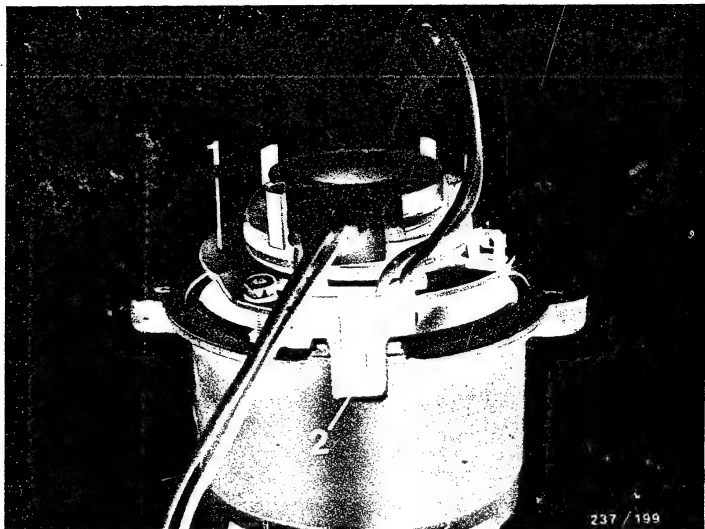
Remove the two-pin plug from the coil section.
Loosen 3 fastening screws (arrows) (screws remain in pulse generator).

C9

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





- 1 = Pulse generator
2 = Plug housing

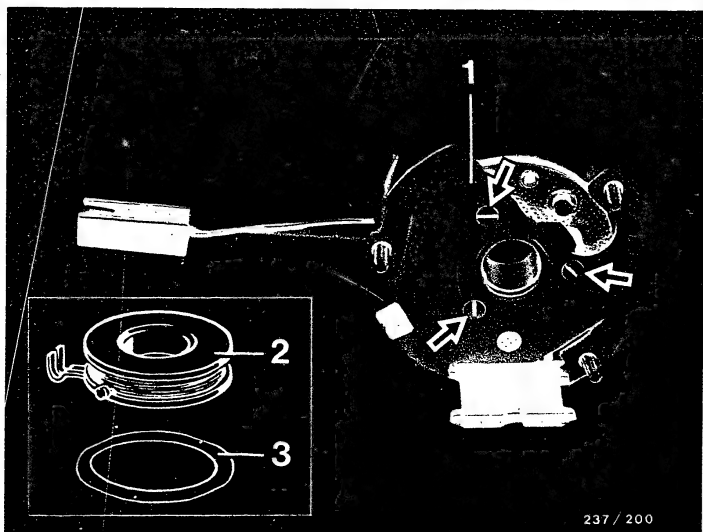
Remove the pulse generator from above with plug housing and electric leads.

C10

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237.., ZV-I





- 1 = Bottom side of pulse generator
- 2 = Coil section
- 3 = Insulating part

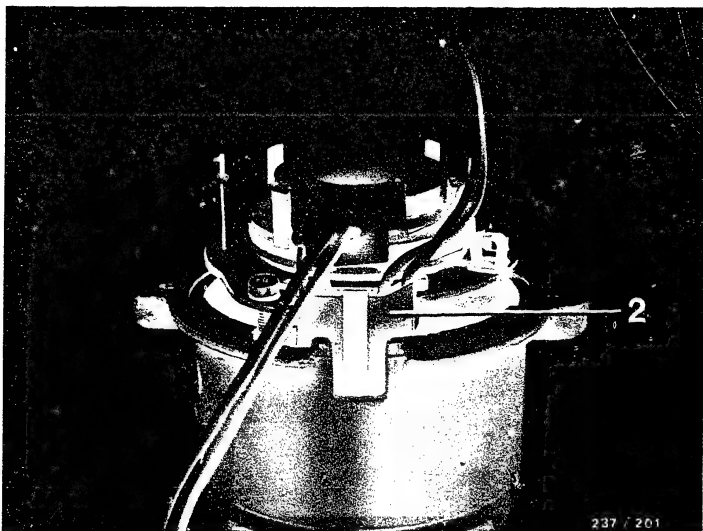
After removing the 3 flat-head screws (arrows) it is possible to take off the coil section and the insulating part.

C11

Removing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





- 1 = Pulse generator
- 2 = Plug housing

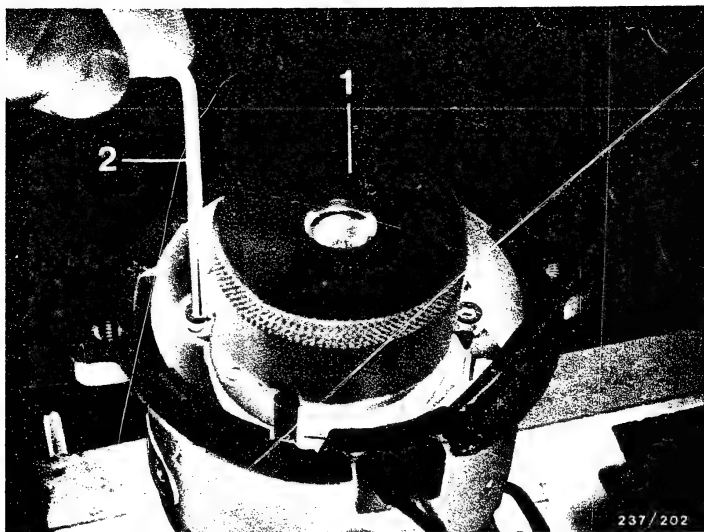
5.2 Installing the pulse generator

Insert the new pulse generator with plug housing including electric leads into the distributor housing.

C12

Installing the pulse generator
Distr. w. tap.-tooth gen. 0 237.., ZV-I





1 = Centering ring KDZV 7223

2 = Hexagon-socket-screw key

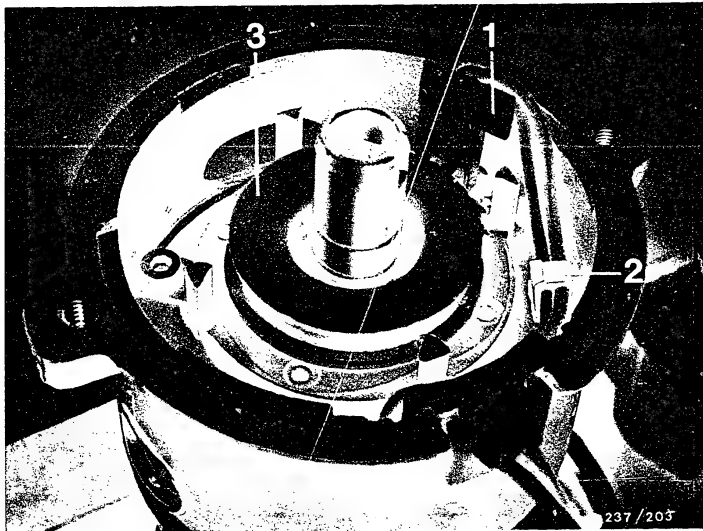
Insert the centering ring.
Position the fastening screws of the pulse generator
and tighten uniformly (see illustration).
Remove the centering ring.

C13

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





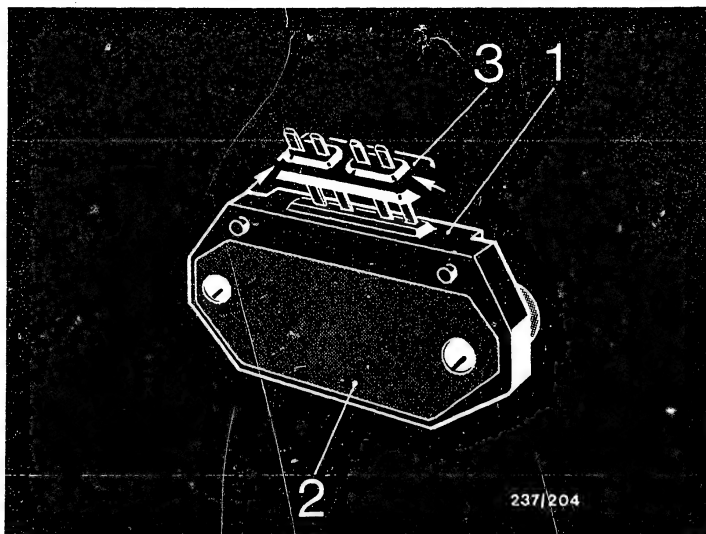
- 1 = Two-pin plug
- 2 = Cable clip
- 3 = Coil section

Plug the two-pin plug onto the electric terminals of the coil section.
Hook the leads into the cable clip.

C14

Installing the pulse generator
Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Trigger box
2 = Base plate

3 = Rubber seal

Mounting the trigger box - if installed (older version).
Coat the base plate of the trigger box (picture) with thermal-conduction paste before mounting on the ignition distributor.

Coat the rubber seal with thermal-conduction paste on the surface in contact with the distributor (see arrows).

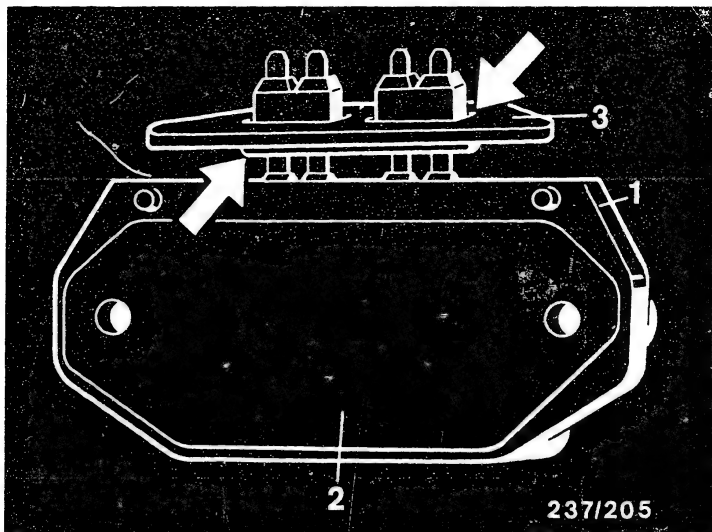
The thermal-conduction paste must be applied with a suitable object (screwdriver, matchstick etc). Do not apply thermal-conduction paste to painted parts.

C15

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Trigger box
2 = Base plate

3 = Rubber seal

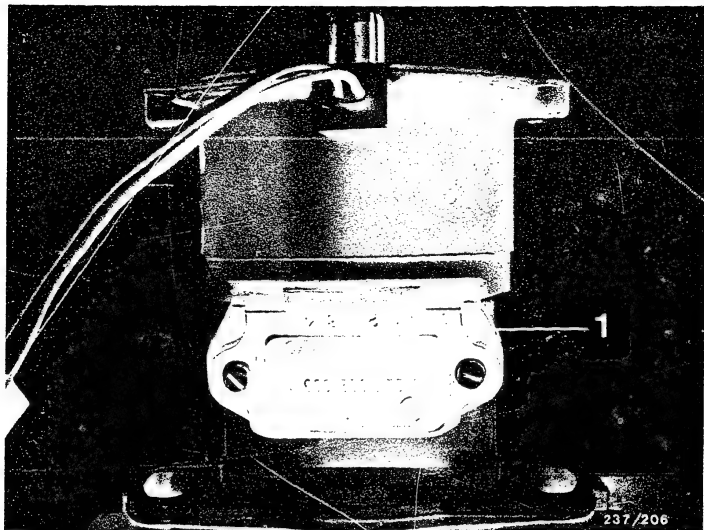
Mounting the trigger box - if installed (newer version)
Coat the base plate of the trigger box (picture) with thermal-conduction paste before mounting on the ignition distributor.

Fill the grease chambers of the rubber seal with thermal-conduction paste on the top and bottom sides (see arrows). The thermal-conduction paste must be applied with a suitable object (screwdriver, match-stick etc). Do not apply thermal-conduction paste to painted parts.

C16

Installing the pulse generator
Distr. w. tap.-tooth gen. 0 237...ZV-I





1 = Trigger box

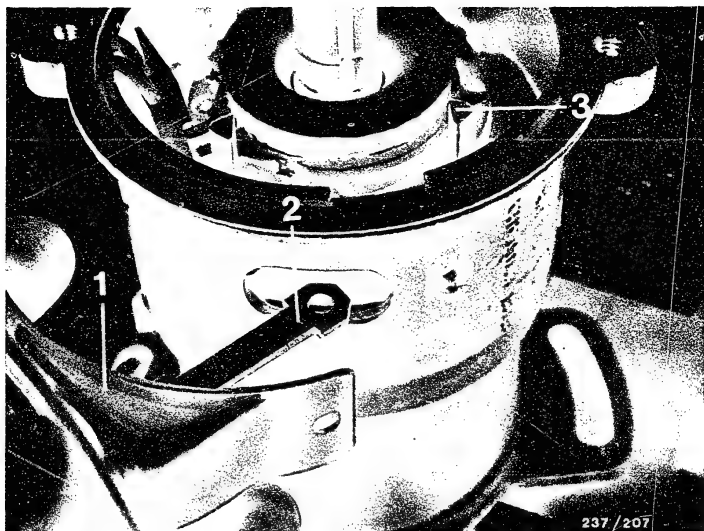
Introduce the trigger box from below into the distributor housing (plug housing).
Position the trigger-box screws and tighten.

C17

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237...ZV-I





- 1 = Vacuum advance mechanism
- 2 = Tie rod
- 3 = Teeth of pulse generator

Turn the teeth of the pulse generator against the direction of rotation of the distributor as far as they will go and hold there. Introduce the vacuum advance mechanism into the distributor housing and hook the tie rod into the pulse generator bearing pin.

Before screwing it down, move the vacuum advance mechanism to and fro and check whether the teeth of the pulse generator move.

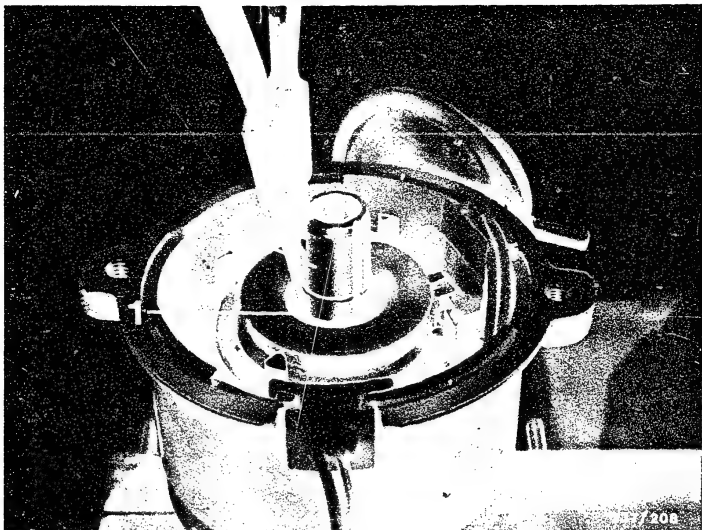
Position the fastening screws of the vacuum advance mechanism and tighten.

C18

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237...,ZV-I





1 = Retainer

3 = Rotor sleeve groove

2 = Rotor sleeve

Install the lower retainer with the opening at 180° to the rotor sleeve groove.

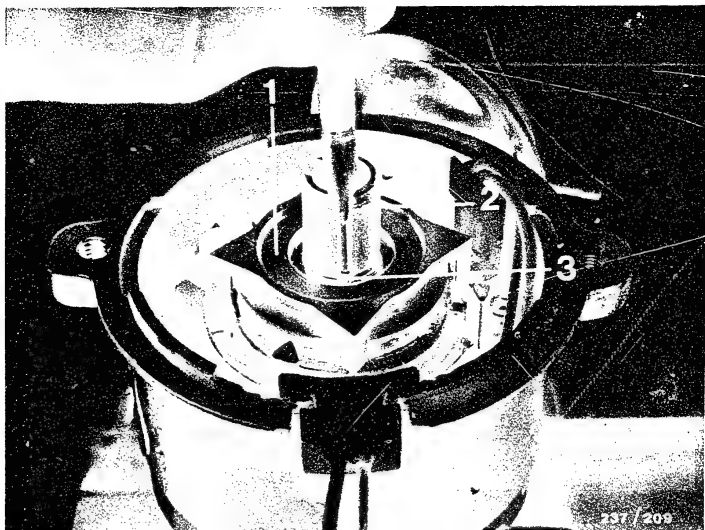
Caution: Make sure that the retainer is latched in position all the way round.

C19

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





- 1 = Trigger wheel
- 2 = Rotor sleeve
- 3 = Straight pin

Install the new trigger wheel and push down as far as it will go.

Bring the groove of the trigger wheel and the rotor sleeve into alignment.

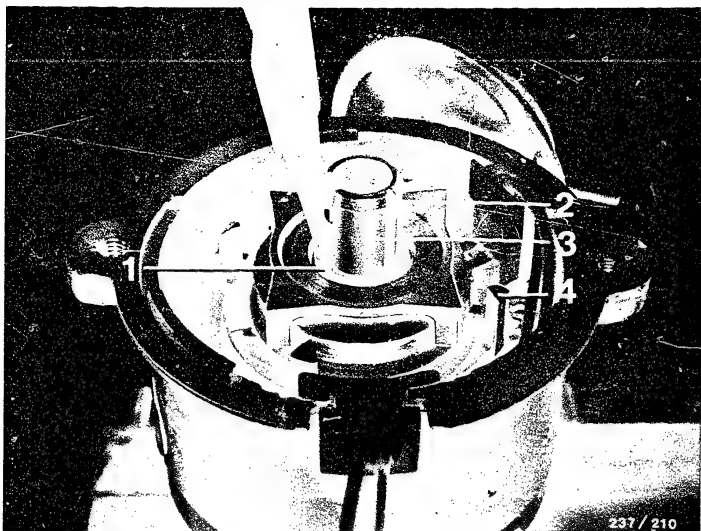
Introduce straight pin into groove and drive in using a drift until the straight pin is flush with the trigger wheel.

C20

Installing the pulse generator

Distr. w. tap.-tooth gen. 0 237..., ZV-I





1 = Retainer

2 = Rotor sleeve

3 = Rotor sleeve groove

4 = Pulse generator

Install the upper retainer with the opening at 180° to the rotor sleeve groove.

Caution: Make sure that the retainer is latched in position all the way round.

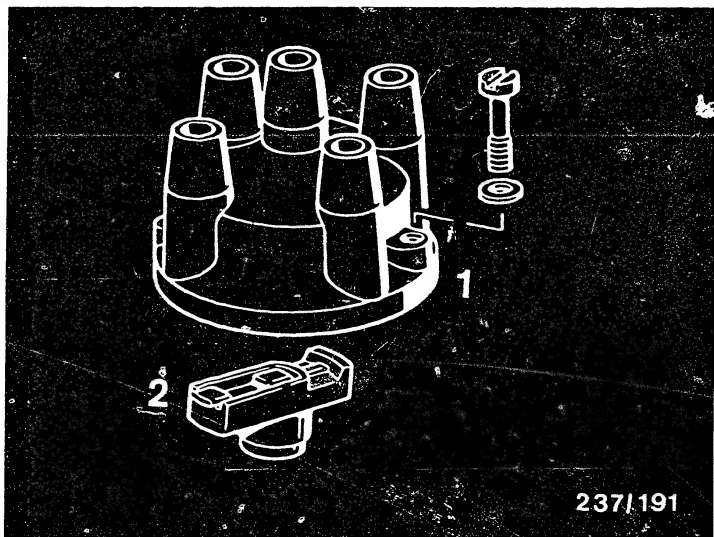
Turn the distributor shaft by hand. Trigger wheel must not brush against the pulse generator.

G21

Installing the pulse generator

Distr. w. tap-tooth gen. 0 237...,ZV-I





- 1 = Distributor cap
2 = Distributor rotor

Install the distributor rotor and distributor cap.
Position the distributor-cap screws and tighten.

C22

Installing the pulse generator
Distr. w. tap.-tooth gen. 0 237.., ZV-I



6. Testing

6.1 Test instructions

All speeds given in the test specifications W 237/1001 ... refer to the drive shaft of the ignition distributor. The direction of rotation of the distributor (viewed looking down on the distributor cap) is given in the type designation, e.g.

JGFU 4 + = Clockwise rotation → = Counterclockwise rotation

or

Z 514 ← = Clockwise rotation → = Counterclockwise rotation

Caution:

The distributor shaft may only be driven (by hand or test bench) if the dust-protection cover is in position (otherwise danger that pulse generator will be destroyed).

Be very careful when working with an open ignition distributor. No metal chips must be allowed to enter the magnetic pulse generator system (the air gap could be bridged by a metal chip).

The ignition distributor may only be driven with the drive pinion or coupling mounted in place (incorrect measurements can result from excessive longitudinal play in the distributor shaft).

Perform the measurements at room temperature and at the stated voltages.

D1

Testing

Ignition distributors 0 237..., ZV-I



6.2 Visual examination

Remove the distributor cap, dust-protection cover and distributor rotor.

The distributor cap and distributor rotor must be clean and must have no cracks or leakage paths.

The electric lead must not be damaged; the original lead must be installed.

Check the connection of the lead on the distributor for security.

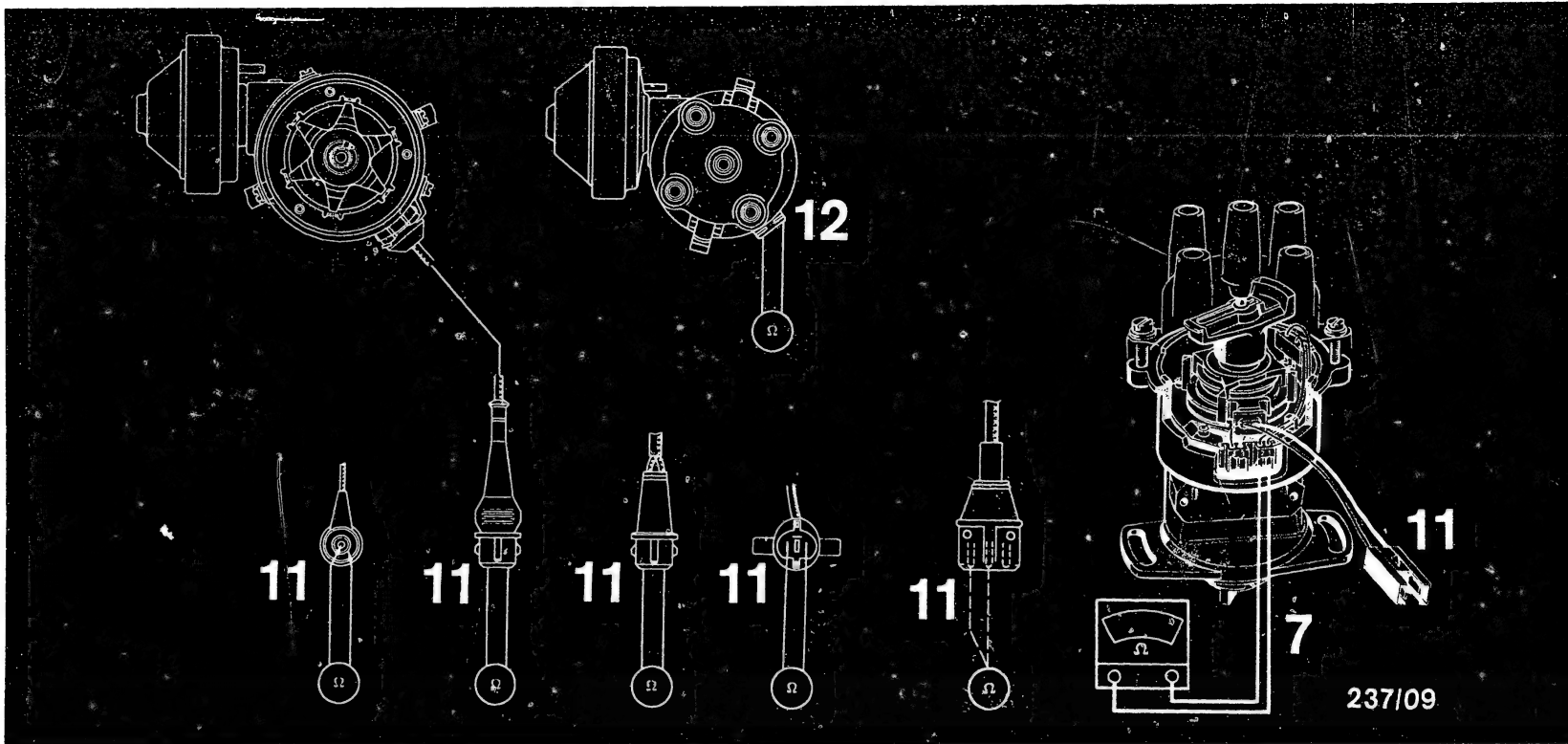
The trigger wheel and the pulse generator must not have any detectable damage. It must be possible to turn the distributor shaft by hand. When the distributor shaft is turned, the trigger wheel must not brush against the pulse generator.

D2

Testing

Ignition distributors 0 237..., ZV-I





7 = Ignition distributor (trigger box removed)

11 = Different distributor connectors

12 = Distributor socket

6.3 Testing the coil section (test specifications W 237/1001...)

Test the coil section including electric lead and socket with an ohmmeter (see picture for examples.) at room temperature (15°...40°C). Temperature has a considerable effect on measured value.

If test specifications are not reached or if there is an open circuit, the electric lead must be unscrewed from the distributor housing and the pulse generator as well as the electric lead must be tested individually.

D3

Testing

Ignition distributors 0 237..., ZV-I

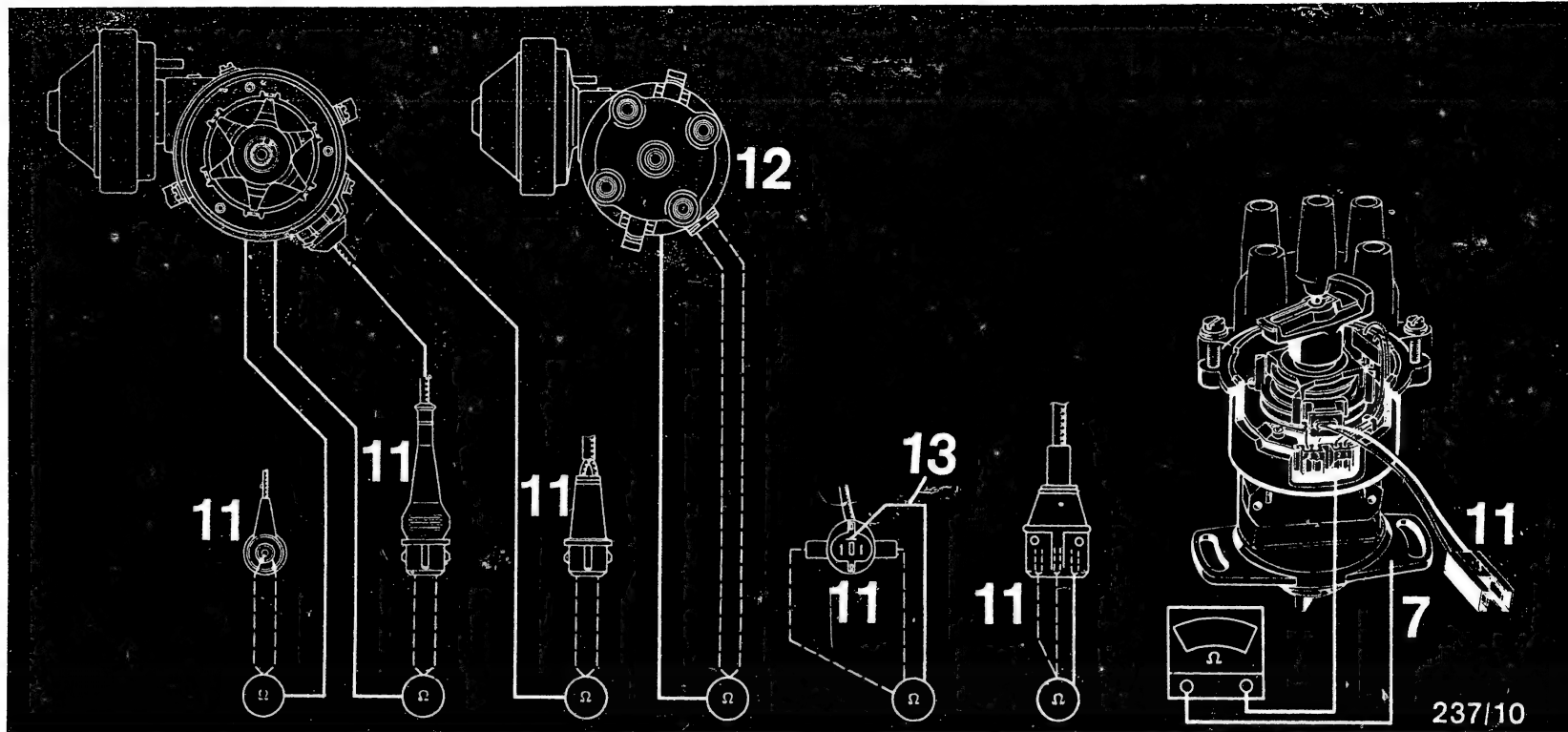


D4

Testing

Ignition distributors 0 237..., ZV-I





- 7 = Ignition distributor with trigger box removed
- 11 = Different distributor connectors
- 12 = Distributor socket
- 13 = Ground

6.4 Testing for short circuit to ground in the coil section including connecting cable (not given in test specifications)

Connect one terminal of the ohmmeter to the distributor housing (ground).
 Connect the other ohmmeter terminal to a contact of the electric lead or socket (see diagrams).
 The ohmmeter must indicate ∞ (infinity).

Note: A pulse generator with a short circuit to ground has an effect on the overall operation of the ignition system (pulse generator minimum voltage, ignition timing as well as secondary available voltage).

D5

Testing

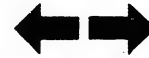
Ignition distributors 0 237..., ZV-I



D6

Testing

Ignition distributors 0 237..., ZV-I



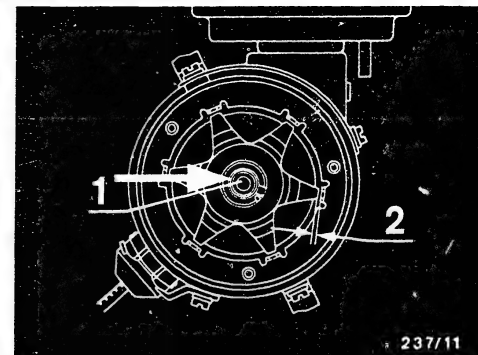
6.5 Testing the minimum air gap between teeth of trigger wheel and teeth of pulse generator (test specifications W-237/1001...)

Clamp the distributor on the distributor test bench (not in vise!). Bring tooth of trigger wheel opposite tooth of pulse generator (see illustration). Press the distributor shaft by hand in the direction of the air gap being measured (arrow). This results in the minimum air gap. Test each air gap individually with feeler gauge (4, 5, 6 times, depending on number of cylinders). The minimum air gap must not be less than the value given in the test specifications.

If the minimum air gap is less than the value given, the ignition distributor must be replaced (worn bearing bushings).

A greater air gap is permissible.

Mount the distributor cap, dust-protection cover and distributor rotor.



- 1 = Press by hand (thumb)
- 2 = Minimum air gap

D7

Testing

Ignition distributors 0 237 ..., ZV-I

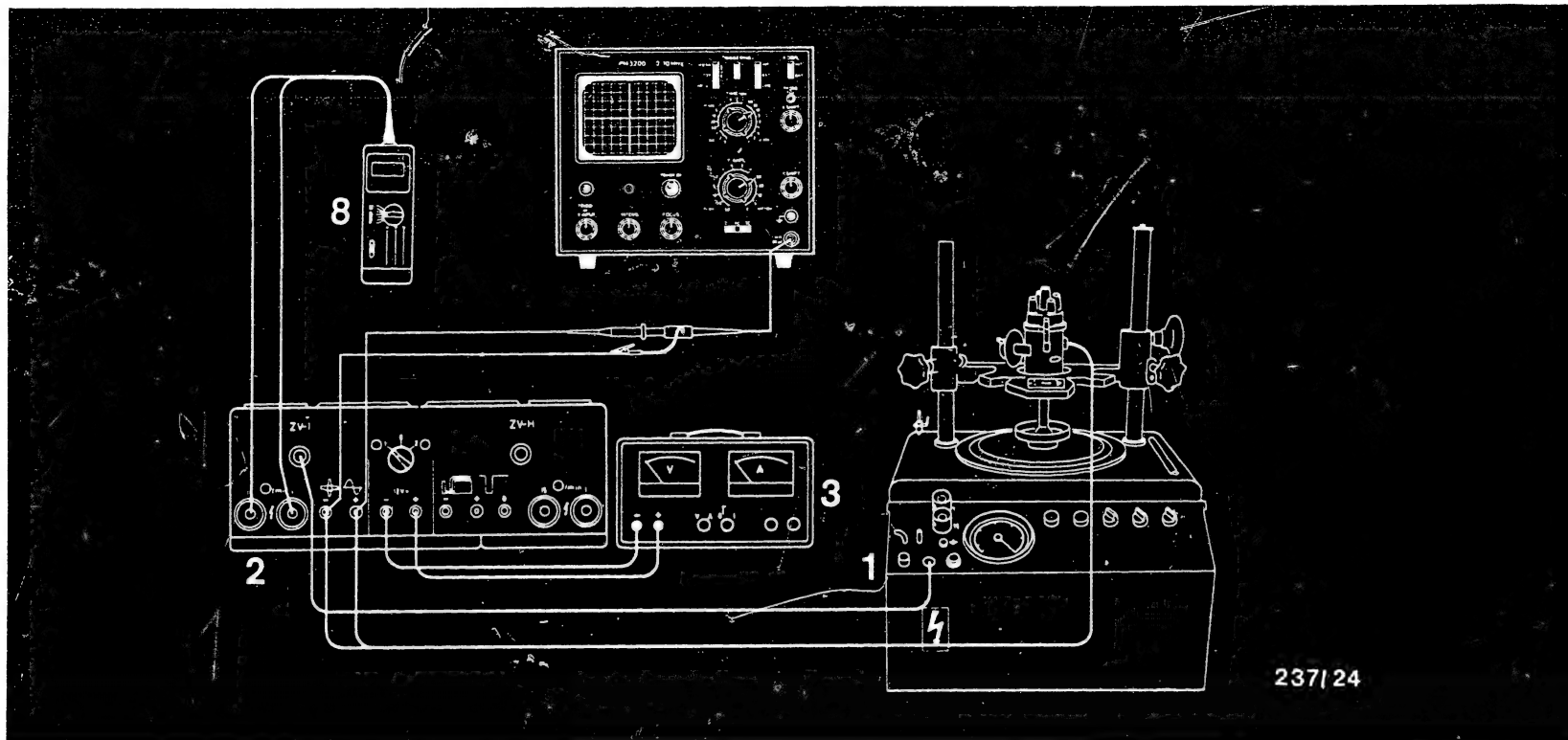


D8

Testing

Ignition distributors 0 237 ..., ZV-I





237/24

1 = Distributor test bench
2 = Distributor test adapter

3 = Voltage stabilizer/battery
8 = Tachometer

13 = Oscilloscope

6.6 Testing the minimum voltage of pulse generators with normal polarity (not given in test specifications)

Clamp the distributor in position and connect to testers and ZV-I test adapter in accordance with above terminal diagram. Follow operating instructions of the individual testers.

D9

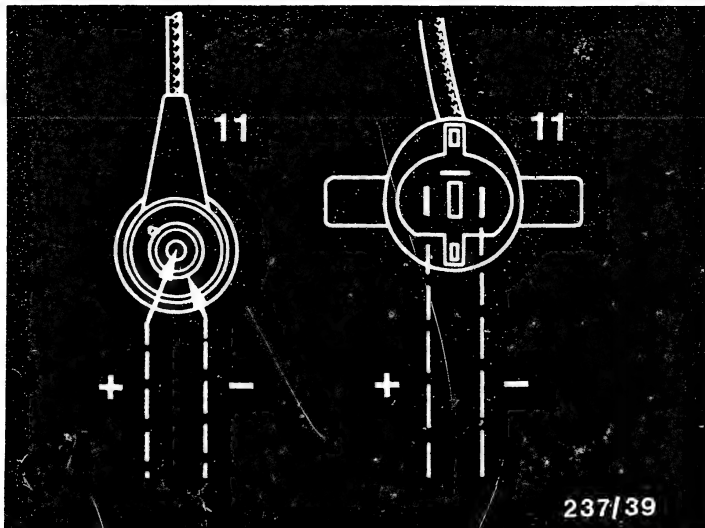
Testing
Ignition distributors 0 237..., ZV-I



D10

Testing
Ignition distributors 0 237..., ZV-I





11 = Different distributor connectors

When connecting the universal connecting cable KDZV 7203 it is necessary to observe the polarity on the above-shown distributor connectors.

Operate the ignition distributor at 500 min^{-1} .

Voltage curve: With correct polarity, the positive half-wave begins with a gradual rise and, after peaking, drops steeply into the zero crossing (see following oscilloscope patterns).

D11

Testing

Ignition distributors 0 237..., ZV-I



The curve of the pulse generator minimum voltage must correspond to the OK oscilloscope pattern. If this is not the case, then the oscilloscope is incorrectly connected to the electric lead or to the socket (polarity reversed).

If the pulse generator minimum voltage for the positive half-wave specified in the OK oscilloscope pattern is not reached, then the teeth of normal pulse generators may be carefully bent to the specified minimum air gap. If the pulse generator minimum voltage is still not reached, the pulse generator must be replaced.

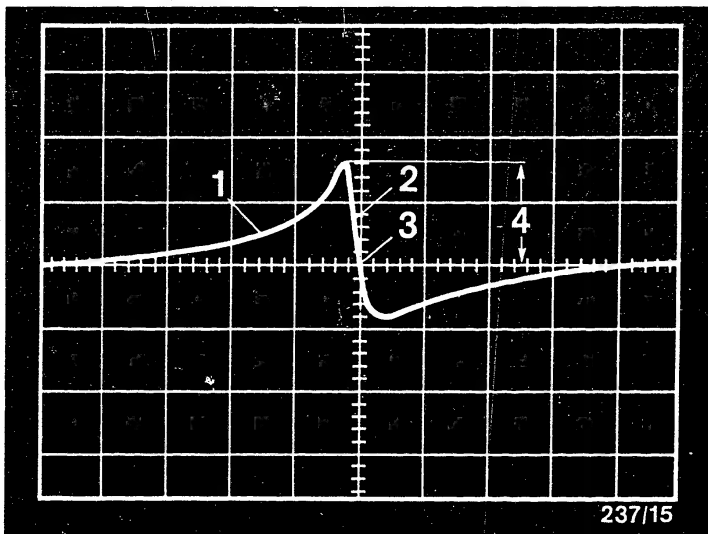
Caution: In the case of pulse generators with pointed teeth the pulse generator must not be bent (teeth will break). If the pulse generator minimum voltage is not reached, the pulse generator must be replaced.

D12

Testing

Ignition distributors 0 237..., ZV-I





- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

OK oscilloscope pattern for 4-cyl. ignition distributor with $800\ \Omega$ pointed-tooth generator

Settings

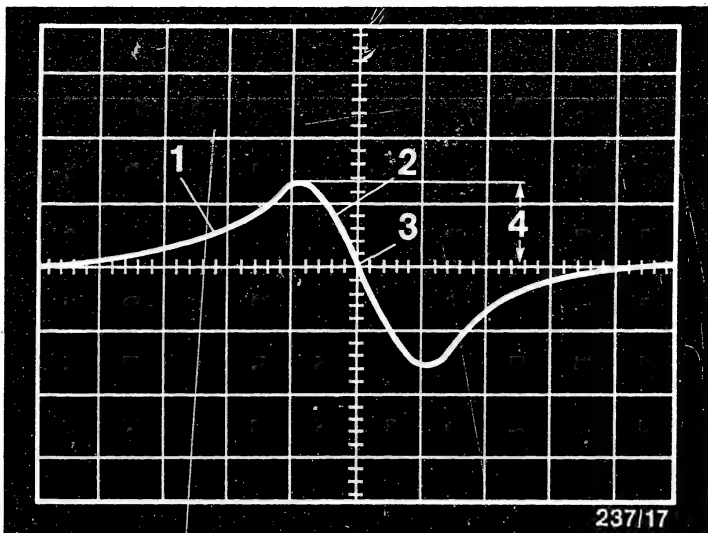
Y = 5 V

X = > 2 ms

D 13

Testing
Ignition distributor 0 237 ..., ZV-I





- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

OK oscilloscope pattern for 6-cyl. ignition distributor with 600 Ω pulse generator

Settings

Y = 5.0 V

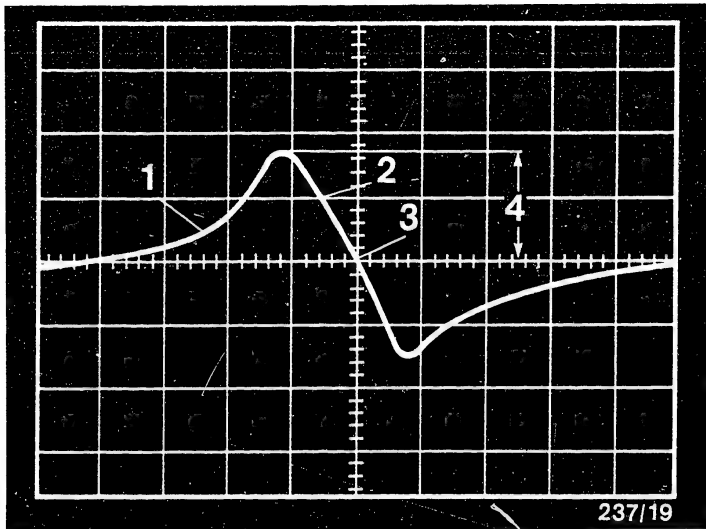
X = > 2 ms

D14

Testing

Ignition distributors 0 237..., ZV-I





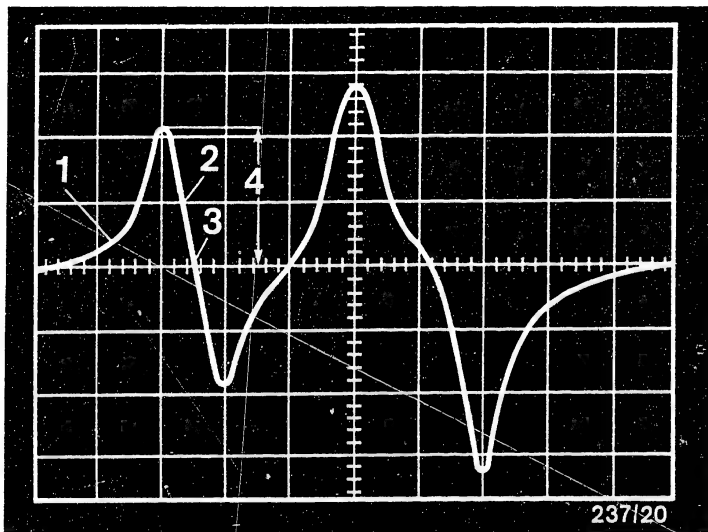
- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

OK oscilloscope pattern for 6-cyl. ignition distributor with 600 Ω pulse generator. Pulse generator has 6 teeth on trigger wheel and 5 teeth on pulse generator.

Settings

Y = 5.0 V
X = > 2 ms





237/20

- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

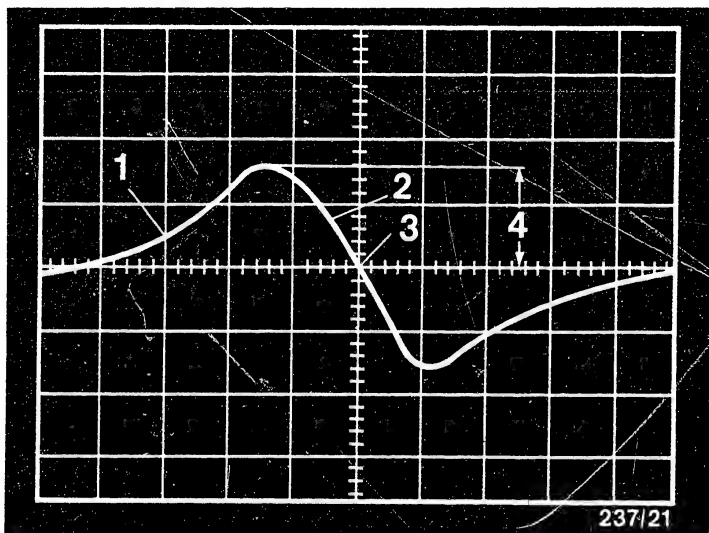
OK oscilloscope pattern for 6-cyl. ignition distributor with 600 Ω pulse generator. Pulse generator has 6 teeth on trigger wheel and 3 teeth on pulse generator.

Settings

Y = 2.0 V

X = > 2 ms





- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

OK oscilloscope pattern for 8-cyl. ignition distributor with 600 Ω pulse generator

Settings

Y = 5.0 V

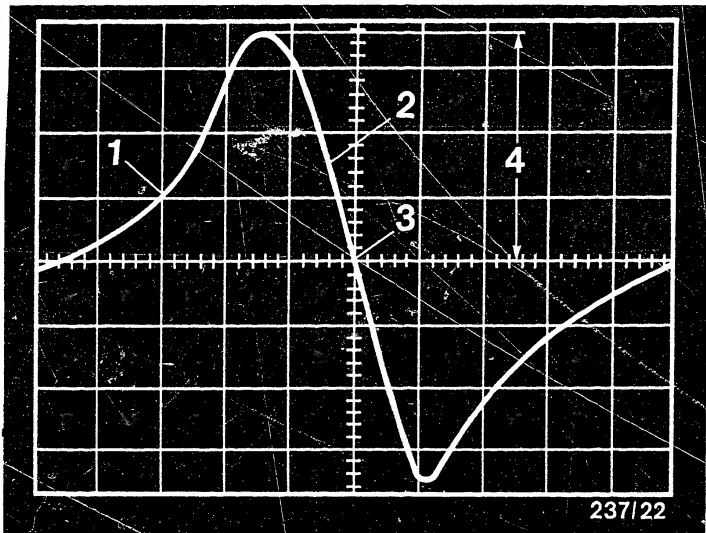
X = > 1 ms

D17

Testing

Ignition distributors 0 237 ..., ZV-I





- 1 = Gradual rise
- 2 = Steep drop
- 3 = Zero crossing
- 4 = Pulse generator minimum voltage

OK oscilloscope pattern for 8-cyl. ignition distributor with 3.9 k Ω pulse generator.

Settings

Y = 5.0 V

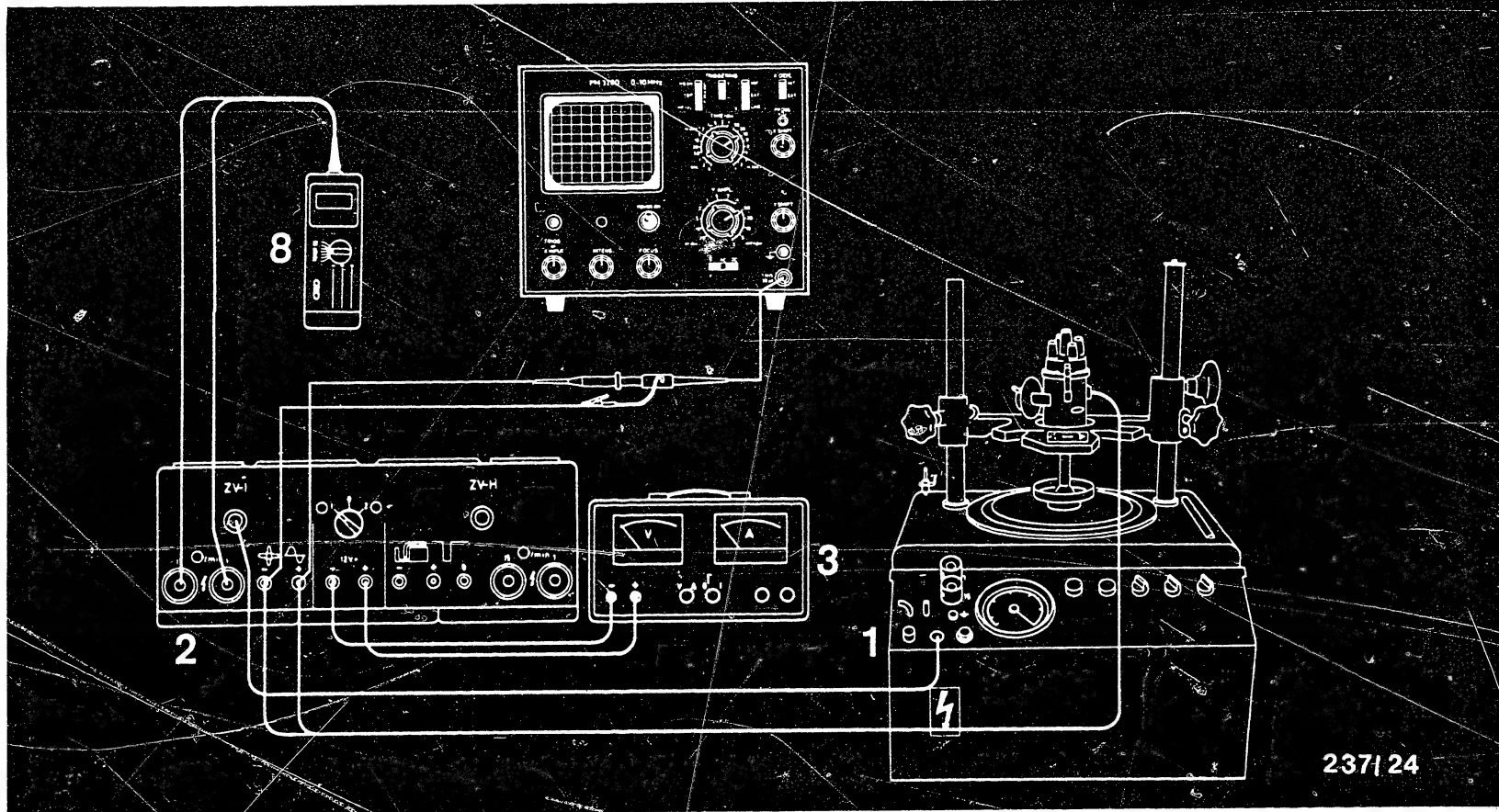
X = > 1 ms

D18

Testing

Ignition distributors 0 237..., ZV-I





237124

1 = Distributor test bench
2 = Distributor test adapter

3 = Voltage stabilizer/battery
8 = Tachometer

13 = Oscilloscope

6.7 Testing the minimum voltage of pulse generators with reversed polarity (not given in test specifications)

Clamp the distributor in position and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow operating instructions of the individual testers.

D19

Testing

Ignition distributors 0 237 ..., ZV-I



D20

Testing

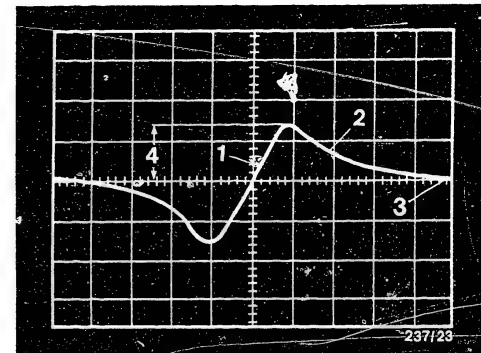
Ignition distributors 0 237 ..., ZV-I



Drive the distributor at 500 min⁻¹.

Curve: In case of "correct" polarity the positive half-wave begins with a steep rise and, after peaking, drops gradually into the zero crossing (graph).

The curve must correspond to the OK oscilloscope pattern. If this is not the case, the oscilloscope is incorrectly connected to the electric lead (polarity wrong way round). If the pulse generator minimum voltage of the positive half-wave specified in the OK oscilloscope pattern is not reached, then the teeth of normal pulse generators may be carefully bent to the specified minimum air gap. If even then the pulse generator minimum voltage is not reached, it is necessary to replace the pulse generator.



OK oscilloscope pattern for 6-cyl. ignition distributor with 600 Ω pulse generator (reversed polarity)

Settings:

Y = 5.0 V/X = > 2 ms

1 = Steep rise

2 = Gradual drop

3 = Zero crossing

4 = Pulse generator minimum voltage

D21

Testing

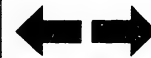
Ignition distributors 0 237 ..., ZV-I

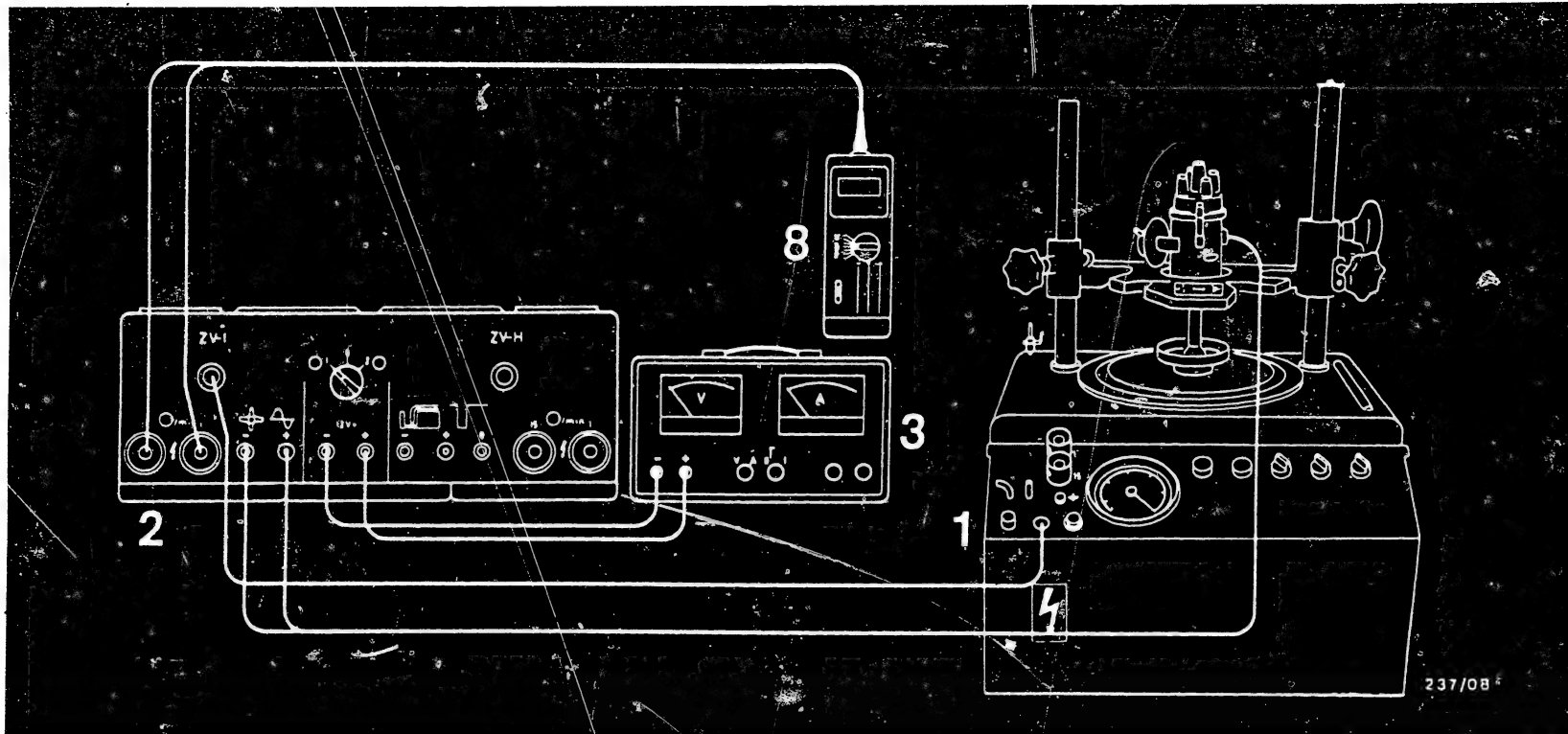


D22

Testing

Ignition distributors 0 237 ..., ZV-I





1 = Distributor test bench
 2 = Distributor test adapter (ZV-I)
 3 = Voltage stabilizer/battery

7 = Distributor
 8 = Tachometer

7. Testing the centrifugal advance

7.1 Testing ignition distributor with zero-point adjustment (test specifications W-237/1001...)

For testing the centrifugal advance curve, use only the ZV-I test adapter KDZV 7202 specified in the test specifications. Mount the ignition distributor and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

E1

Testing

Ignition distributors 0 237..., ZV-I



E2

Testing

Ignition distributors 0 237..., ZV-I



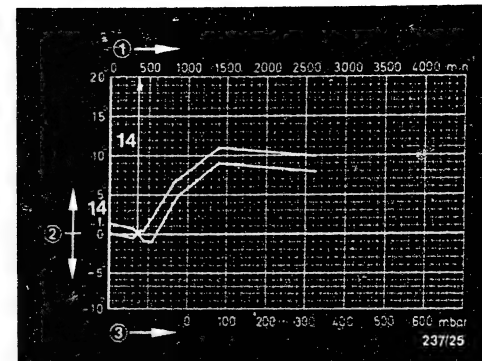
7.1.1 Adjusting the zero point

It is necessary to adjust the zero point because inductive pulse generators have an inherent advance, i.e. there is an advance although the centrifugal advance mechanism is not yet working or has already shut off (see top graph for example).

Switch on the 12 V power supply.

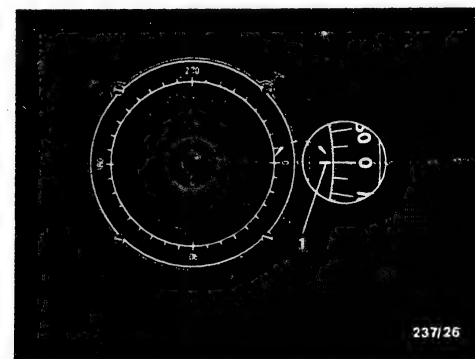
Starting out from the zero point (14) on the distributor graph, move vertically upward and read off the distributor drive speed (arrow) and set this speed on the distributor test bench. Turn the scale ring of the distributor test bench or the ignition distributor so that at the specified zero point speed the illuminated mark of a cylinder lights up at 0°/360° (see bottom diagram for example).

Tighten locking screw of ignition distributor or clamping ring of chuck.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 14 = Zero point/zero point speed

1 = Illuminated mark



E3

Testing

Ignition distributors 0 237 ..., ZV-I



E4

Testing

Ignition distributors 0 237 ..., ZV-I



237/26

7.1.2 Testing the centrifugal advance

The centrifugal advance is tested at least twice at each change of direction as well as in the end range of a curve. The test is only to be carried out with increasing speed (this avoids measurement errors).

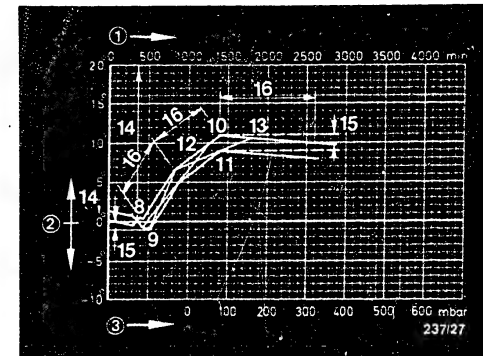
Read off the advance angle and compare with test specifications. See graph for example. If an addition to the tolerance range of $+0.5^\circ$ is given in the test specifications, the upper line of the tolerance range must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom.

If an addition to the tolerance range of $-0.5^\circ/-1.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the bottom, and the lower line by 1.5° to the bottom.

Drive the ignition distributor at the appropriate speed (see test specifications).

If the specified values are not reached, the ignition distributor (advance system) is defective.

Switch off the power supply.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 8 / 9 = Start of centrifugal advance
- 10 / 11 = End of centrifugal advance
- 12 / 13 = In extreme cases the end of centrifugal advance may be located here.
- 14 = Zero point/zero point speed
- 15 = Inherent advance
- 16 = Change in curve direction

E5

Testing

Ignition distributors 0 237 ..., ZV-I

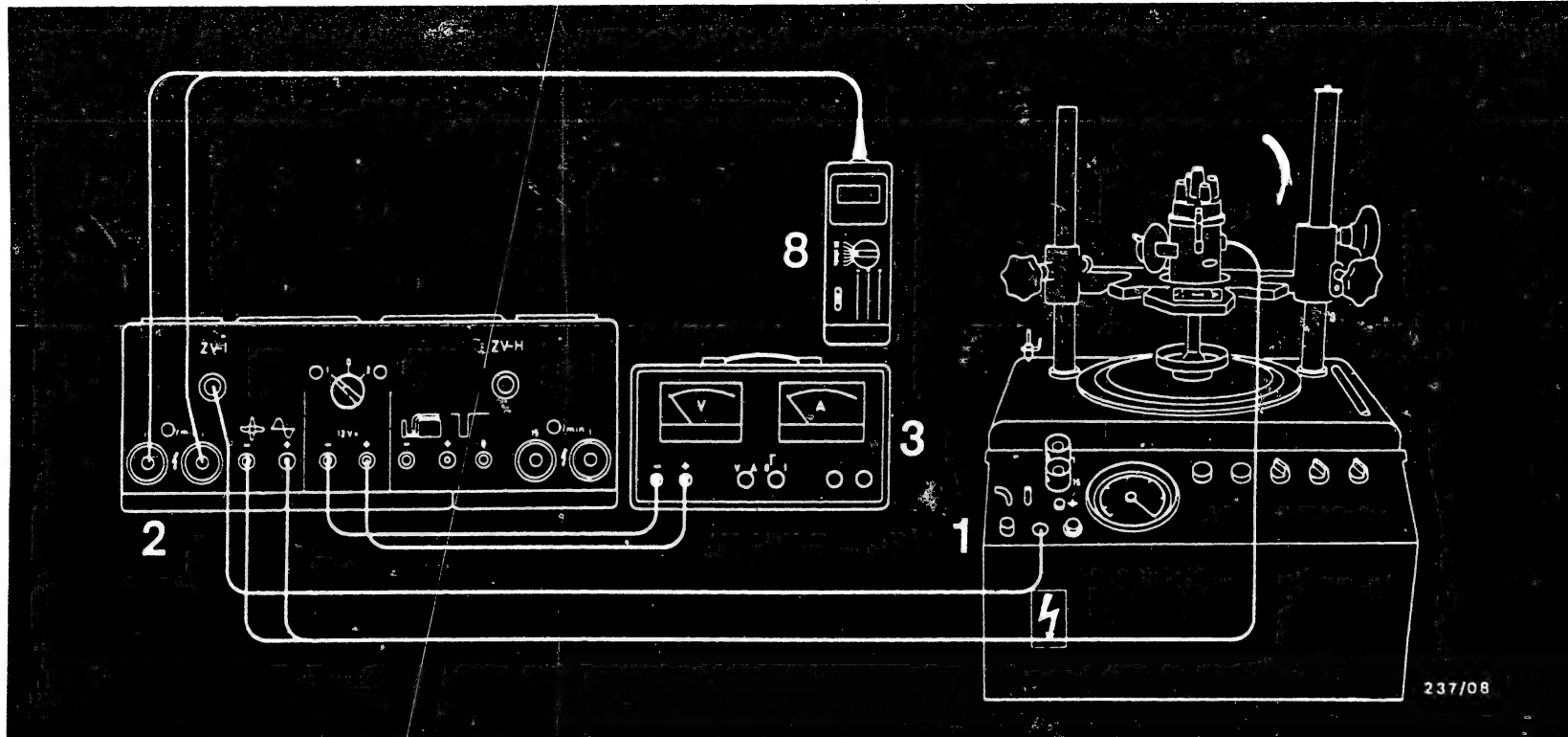


E6

Testing

Ignition distributors 0 237 ..., ZV-I





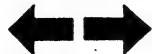
- 1 = Distributor test bench
 2 = Distributor test adapter (ZV-I)
 3 = Voltage stabilizer/battery
 7 = Ignition distributor
 8 = Tachometer

7.2 Testing ignition distributor with setting point in upper speed range - with/without coupled advance curve (test specifications W-237/1001...)

For testing the centrifugal advance curve, use only the ZV-I test adapter KDZV 7202 specified in the test specifications. Mount the ignition distributor and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

E7

Testing
 Ignition distributors 0 237..., ZV-I



E8

Testing
 Ignition distributors 0 237..., ZV-I



7.2.1 Setting the setting point

Switch on the 12 V power supply.

Starting out from the setting point (17) on the distributor graph (see graph for example), move vertically upward and read off the distributor drive speed (arrow) and set this speed on the distributor test bench.

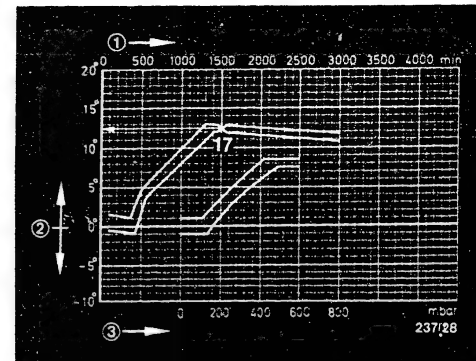
Starting out from the setting point on the distributor graph, move horizontally to the left and read off the distributor-shaft advance (number of degrees) (arrow).

Turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at the stated number of degrees. See graph.

Tighten locking screw of ignition distributor or clamping ring of chuck.

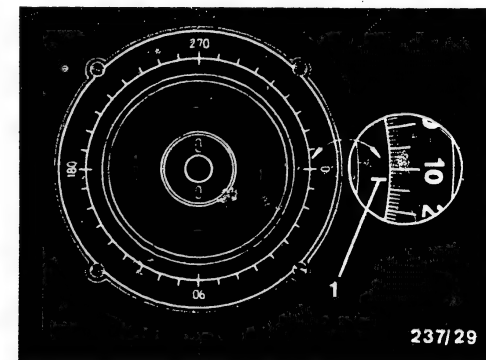
Carefully set the drive speed and the number of degrees on the scale ring since otherwise the measurement result will be incorrect.

Reduce the drive speed to 400 min^{-1} .



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 17 = Setting point

1 = Illuminated mark



E9

Testing

Ignition distributors 0 237 ..., ZV-I



E10

Testing

Ignition distributors 0 237 ..., ZV-I



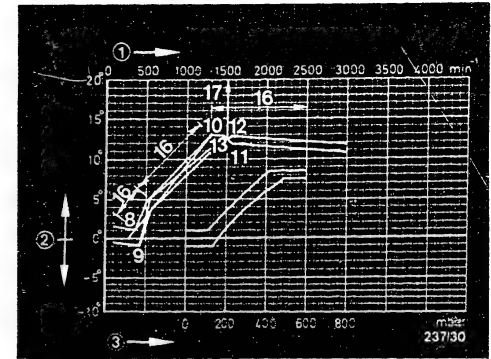
7.2.2 Testing the centrifugal advance

The centrifugal advance is tested with increasing speed at least twice at each change of direction as well as at the end range of a curve.

Read off the advance angle and compare with test specifications. See graph for example. If an addition to the tolerance range of $+0.5^\circ$ is given in the test specifications, the upper line of the tolerance range must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom.

If an addition to the tolerance range of $-0.5^\circ/-1.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the bottom, and the lower line by 1.5° to the bottom.

If the specified values are not reached, the ignition distributor (advance system) is defective.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 8/ 9 = Start of centrifugal advance
- 10/11 = End of centrifugal advance
- 12/13 = In extreme cases the end of centrifugal advance may be located here
- 16 = Change in curve direction
- 17 = Setting point

E11

Testing

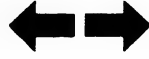
Ignition distributors 0 237 ..., ZV-I



E12

Testing

Ignition distributors 0 237 ..., ZV-I



7.2.3 Testing the coupled setting (only necessary for coupled advance curve)

There is a coupled advance curve when a difference is given in the test specification (in degrees) between centrifugal and vacuum advance (advance/retard). See graphs for examples.

Set the drive speed on the distributor test bench to 400 min^{-1} .

Starting out from the setting point on the distributor graph, move horizontally to the left and read off the distributor-shaft advance (number of degrees) (see test specifications). Turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at the stated number of degrees.

Tighten locking screw of ignition distributor or clamping ring of chuck.

Carefully set the drive speed and number of degrees on the scale ring since otherwise the measurement result will be incorrect.

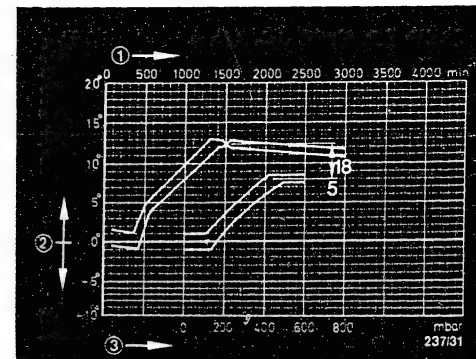
Connect the vacuum hose of the distributor test bench to the vacuum unit (vacuum connection) "advance"/"retard".

Set the vacuum to 600 mbar with the aid of the vacuum pump. Do not switch off the vacuum pump.

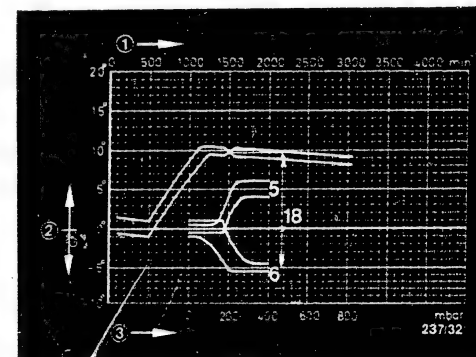
The illuminated mark on the distributor test bench has moved.

Read off on the scale ring the difference (18) between the moved illuminated mark and the previously set number of degrees and compare with test specification. See graphs for examples. If the specified difference $\pm 0.5^\circ$ is not reached, the ignition distributor (advance system) is defective.

Switch off the power supply.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 5 = Negative gauge pressure (vacuum) advance
- 6 = Negative gauge pressure (vacuum) advance
- 18 = Difference between centrifugal and vacuum advance



E13

Testing

Ignition distributors 0 237 ..., ZV-I

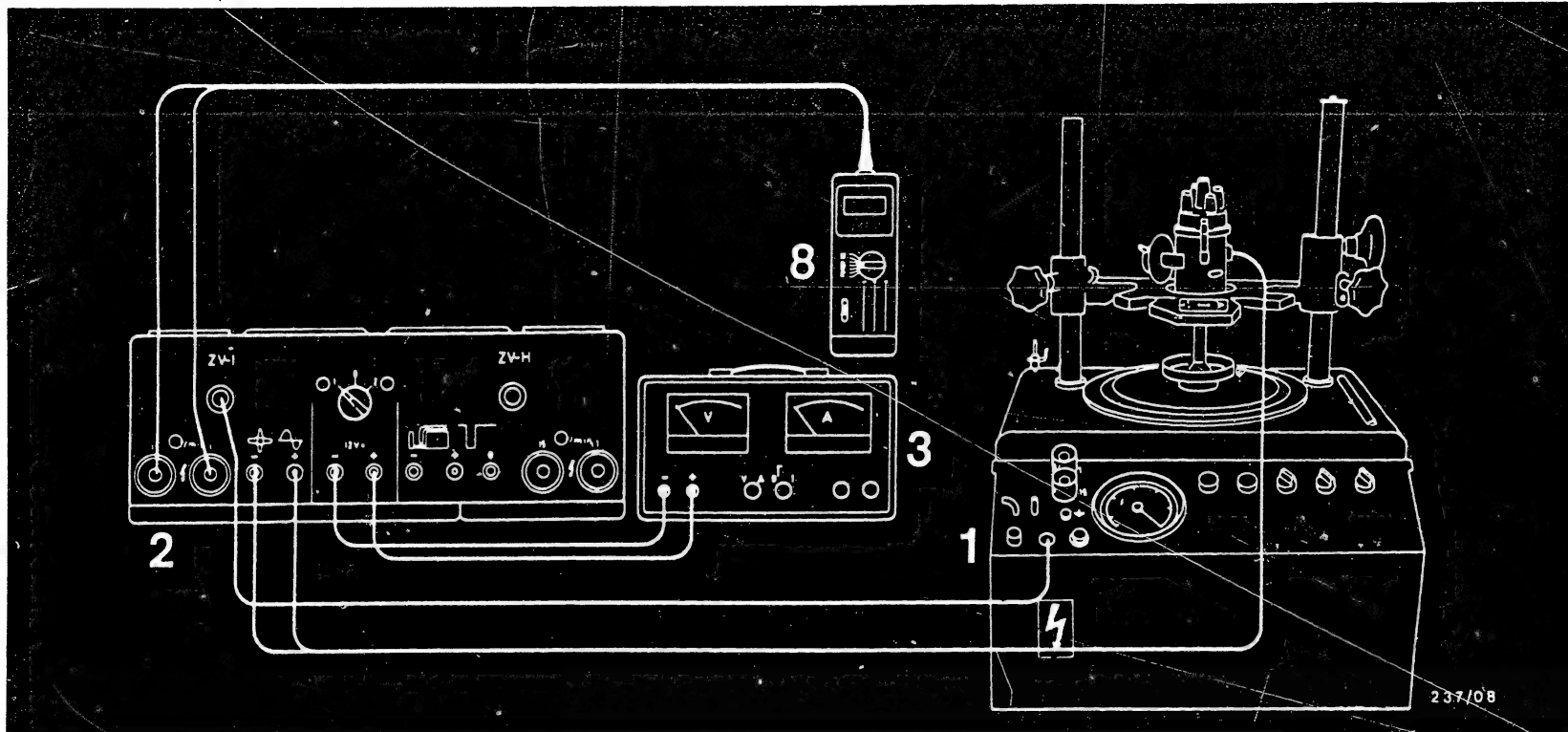


E14

Testing

Ignition distributors 0 237 ..., ZV-I





237/08

- 1 = Distributor test bench
- 2 = Distributor test adapter (ZV-I)
- 3 = Voltage stabilizer/battery
- 7 = Ignition distributor
- 8 = Tachometer

7.3 Testing ignition distributors with reversed pulse generator polarity (Test Specifications W-237/1001...)

In order to test the centrifugal advance curve, use only the ZV-I test adapter KDZV 7202 specified in the test specifications.

Clamp the ignition distributor in position and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

E15	Testing	↔
	Ignition distributors 0 237 ..., ZV-I	

E16	Testing	↔
	Ignition distributors 0 237 ..., ZV-I	

With this ignition distributor, a large speed-dependent inherent advance is achieved by reversing the polarity in the coil section (see top graph for example). The advance curve visible on the distributor graph represents the addition of electrical inherent advance and mechanical centrifugal advance.

Switch on the 12 V power supply.

Starting out from the setting point (17) on the distributor graph (see graph for example) move vertically upward and read off the distributor drive speed (arrow) and set this speed on the distributor test bench.

Starting out from the setting point on the distributor graph, move horizontally to the left and read off the distributor-shaft advance (number of degrees).

Turn the scale ring on the distributor test bench or turn the ignition distributor so that the illuminated mark of a cylinder lights up at the stated number of degrees (see bottom picture for example).

Tighten the locking screw of the ignition distributor or tighten the clamping ring of the chuck. Carefully set the drive speed and the number of degrees on the scale ring since, otherwise, the measurement result will be incorrect.

Reduce the drive speed to approx. 100 min^{-1} .

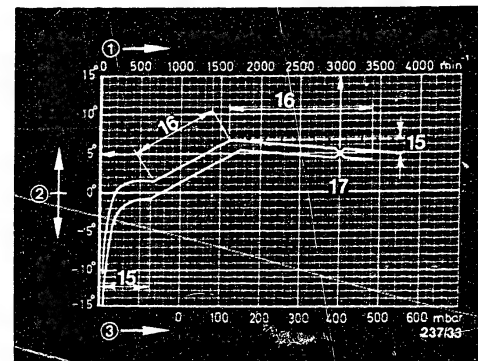
The centrifugal advance is tested with increasing speed at least twice at each change of direction as well as at the end range of a curve.

Read off the advance angle and compare with test specification. See graph for examples.

If an addition to the tolerance range of $\pm 0.5^\circ$ is given in the test specifications, the upper line of the tolerance range must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom.

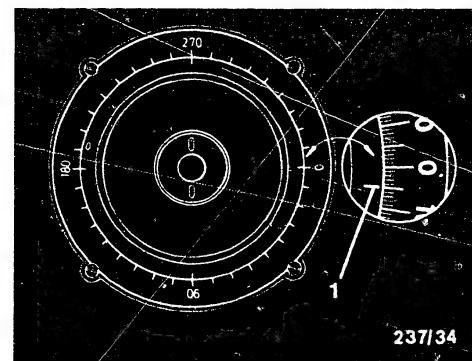
If the specified values are not reached, the ignition distributor (advance system) is defective.

Switch off the power supply.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 15 = Inherent advance
- 16 = Change in curve direction
- 17 = Setting point

- 1 = Illuminated mark (e.g. at 5°C).



E17

Testing

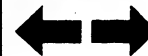
Ignition distributors 0 237 ..., ZV-I

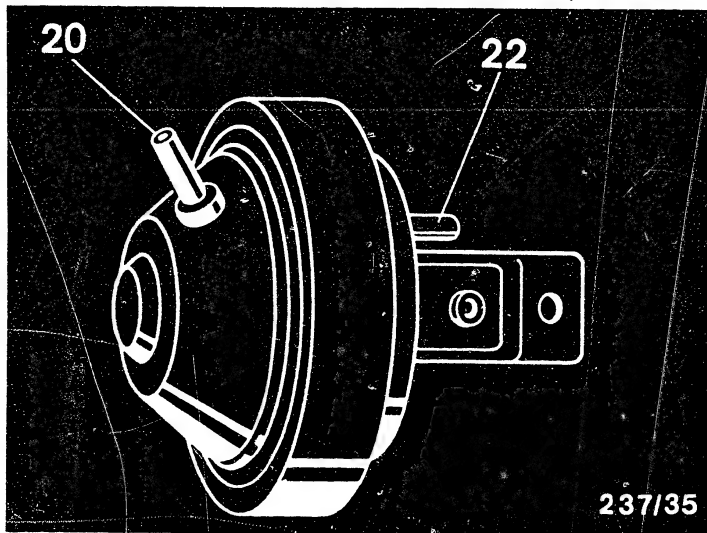


E18

Testing

Ignition distributors 0 237 ..., ZV-I





237/35

20 = Vacuum connection "advance"

22 = Vacuum connection "retard"

Note:

According to DIN the term "vacuum" should be replaced by "negative gauge pressure". For the sake of clarity, however, we will continue to use "vacuum".

8. Testing the vacuum advance mechanism

8.1 Testing the vacuum unit for leaks

(Not given in test specifications)

Connect the vacuum hose from the distributor test bench to the vacuum unit.

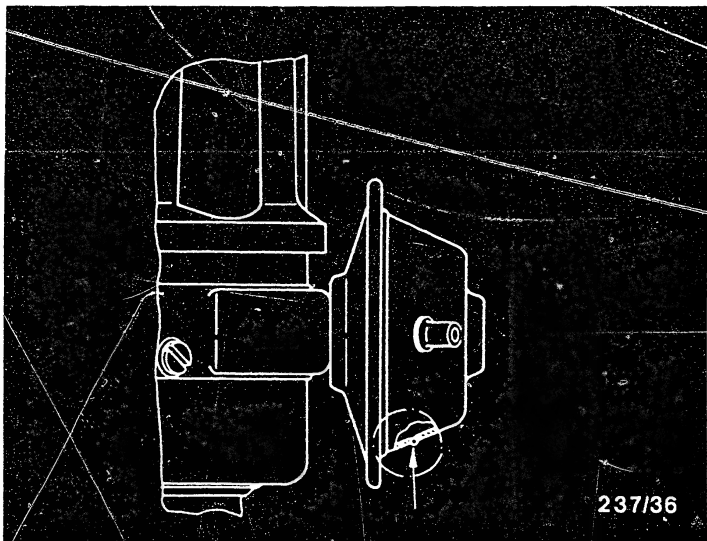
Using the vacuum pump, increase the vacuum until 600 mbar is reached. Switch off the vacuum pump.

E19

Testing

Ignition distributors 0 237..., ZV-I





237/36

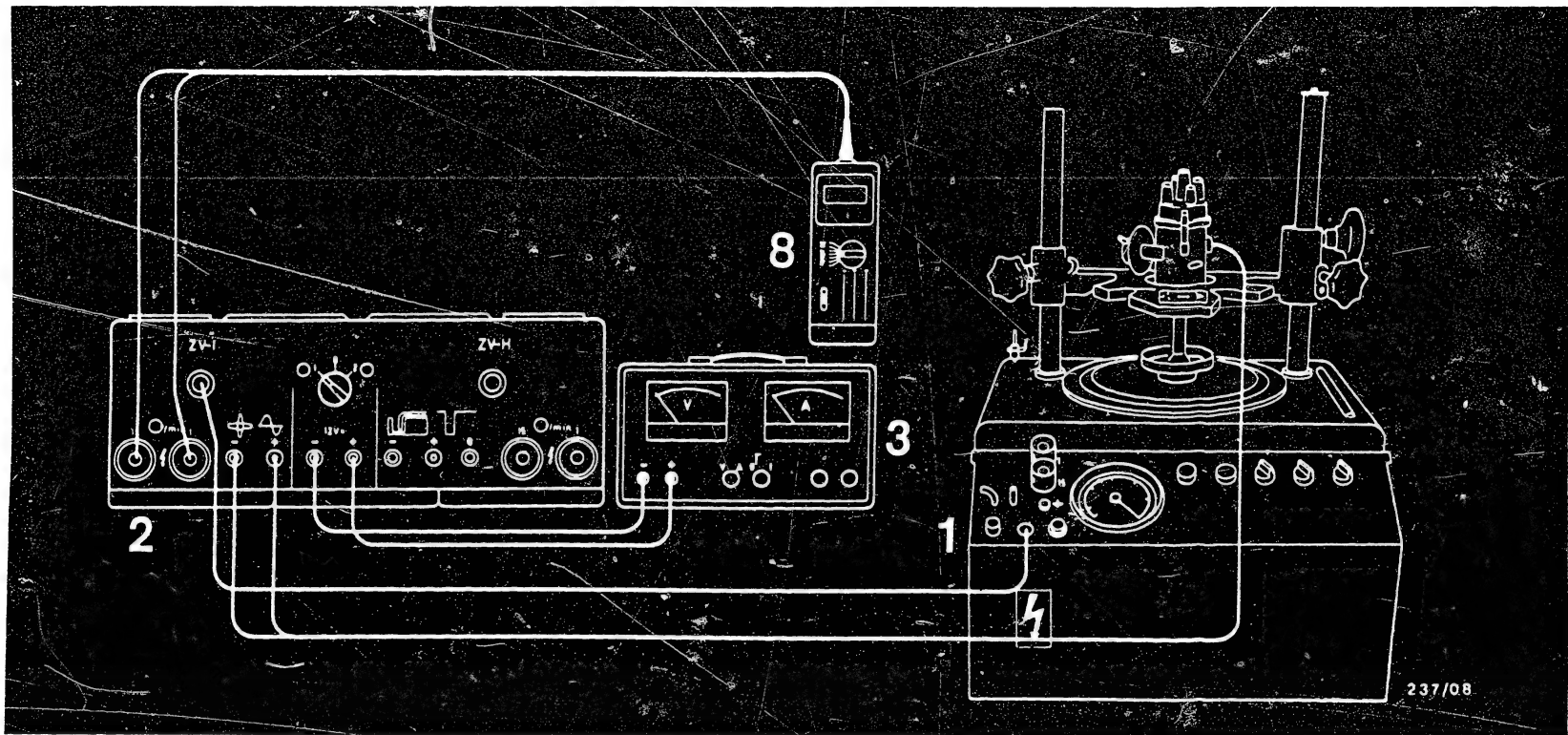
The maximum permissible pressure drop in 1 minute is 20 %. Remedy any leaks found at the connection. Replace vacuum-advance mechanism if leaking. If there is an extremely heavy drop in pressure, check whether the vacuum unit is of the type which has a vent hole (approx. 0.5 mm diameter). See picture, arrow. Seal off the hole while testing for leaks.

E20

Testing

Ignition distributors 0 237..., ZV-I





1 = Distributor test bench
 2 = Distributor test adapter (ZV-I)
 3 = Voltage stabilizer/battery

7 = Ignition distributor
 8 = Tachometer

8.2 Testing the vacuum advance (test specifications W-237/1001...).

For testing the vacuum advance curve, use only the ZV-I test adapter KDZV 7202 specified in the test specifications. Mount the ignition distributor and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

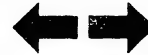
E21

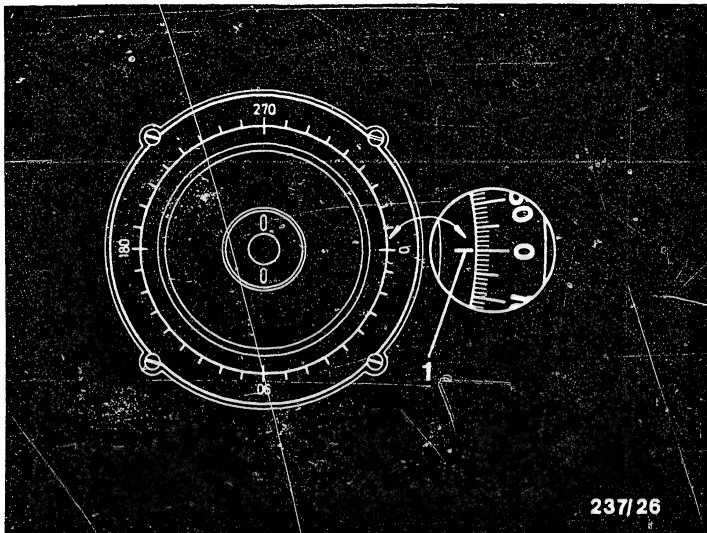
Testing
 Ignition distributors 0 237..., ZV-I



E22

Testing
 Ignition distributors 0 237..., ZV-I





237/26

1 = Illuminated mark

Switch on the 12 V power supply. Drive the ignition distributor at a speed 200 min^{-1} above the end of centrifugal advance (see test specifications).

Turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at $0^\circ/360^\circ$. See illustration. Tighten locking screw of ignition distributor or clamping ring of chuck.

E23

Testing

Ignition distributors 0 237..., ZV-I

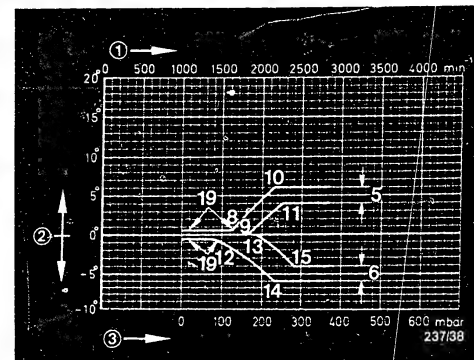


If the measured values are not within the tolerance range, then check the vacuum advance system for freedom of movement.
After reaching the end of advance, an increase in the vacuum must not result in a further advance.

Switch off the power supply.

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there already to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at points 8/9 or 12/13.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 5 = Negative gauge pressure (vacuum) advance
- 6 = Negative gauge pressure (vacuum) retard
- 8/ 9, 12/13 = Start of vacuum advance "advance and retard unit"
- 10/11, 14/15 = End of vacuum advance "advance and retard unit"
- 19 = "Adjustment base"

F1

Testing

Ignition distributors 0 237 ..., ZV-I



F2

Testing

Ignition distributors 0 237 ..., ZV-I



9. Testing the vacuum/overpressure advance mechanism pressure unit with one or two connecting pipes.

9.1 Testing the vacuum or overpressure unit for leaks

(Not given in test specifications)

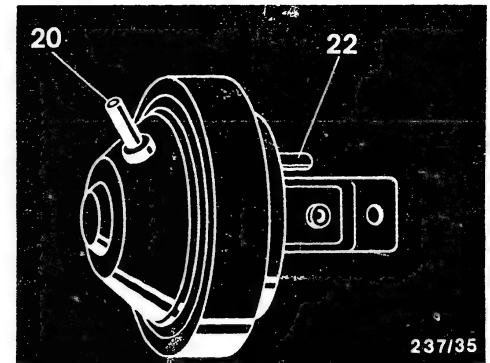
Connect the vacuum hose from the distributor test bench to the pressure unit.

In the case of the vacuum/overpressure unit with double retard, the overpressure unit is also tested for leaks using vacuum.

In the case of the vacuum/overpressure unit with one connecting pipe, the advance and retard unit is tested for leaks using vacuum.

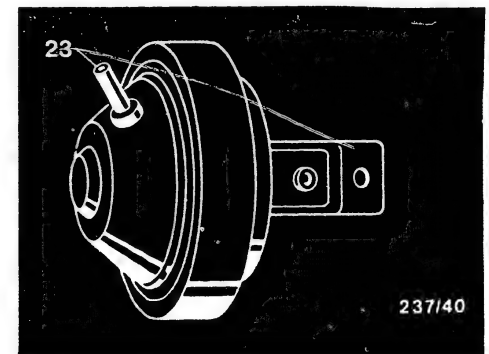
Using the vacuum pump, increase the vacuum until 600 mbar is reached. Switch off the vacuum pump.

The max. permissible pressure drop in 1 minute is 20%. Remedy any leaks at the connection. Replace vacuum-advance mechanism if leaking.



20 = Vacuum connection "retard"
22 = Overpressure connection "retard"

23 = Vacuum connection "advance"
and
overpressure connection "retard"



F3

Testing

Ignition distributors 0 237 ..., ZV-I

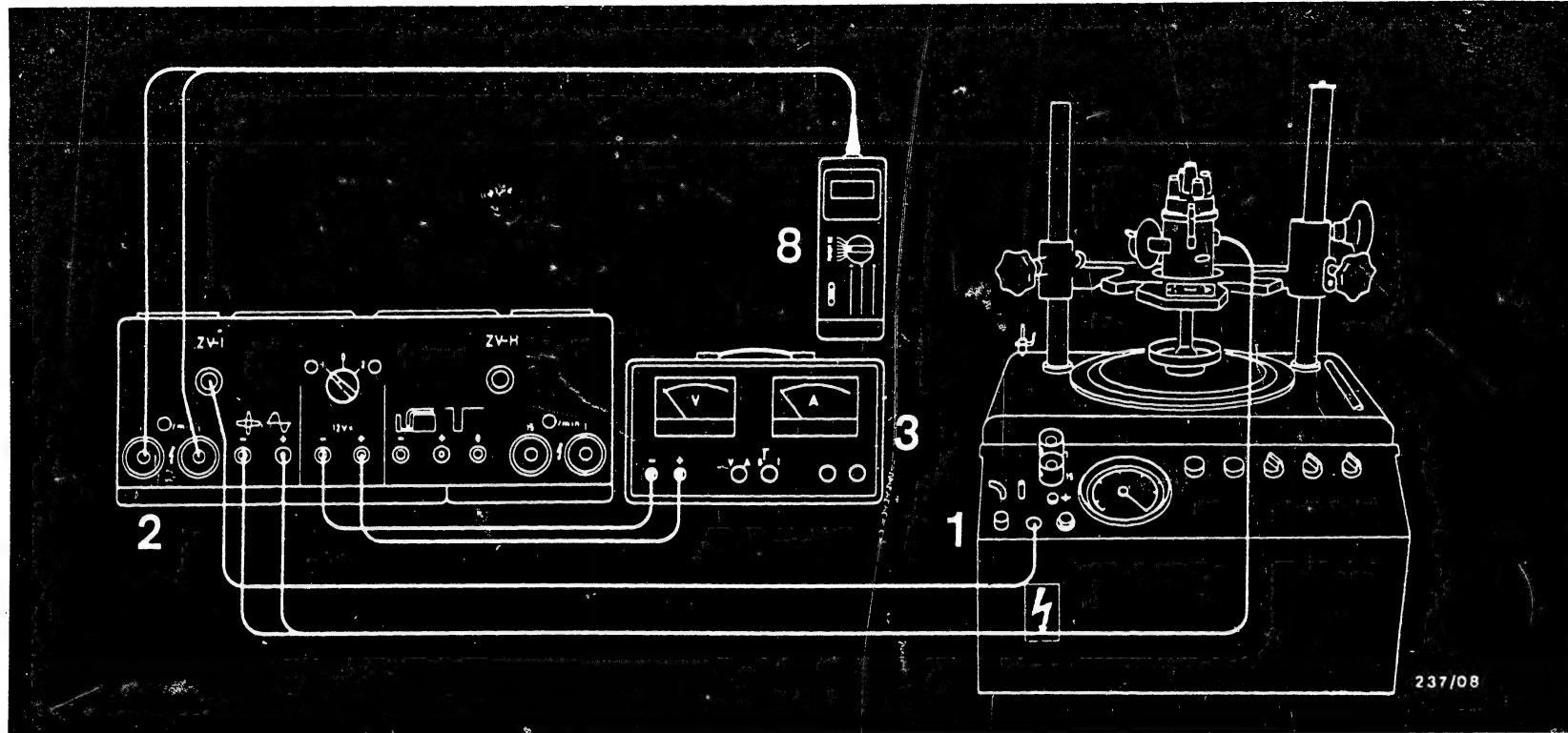


F4

Testing

Ignition distributors 0 237 ..., ZV-I





1 = Distributor test bench
 2 = Distributor test adapter (ZV-I)
 3 = Voltage stabilizer/battery

7 = Ignition distributor
 8 = Tachometer

9.2 Testing the vacuum/overpressure advance (test specification W-237/1001...)

For testing the vacuum/overpressure advance curve, use only the ZV-I test adapter KDZV 7202 specified in the test specifications.

Mount the ignition distributor and connect to testers and ZV-I test adapter in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

F5

Testing

Ignition distributors 0 237..., ZV-I

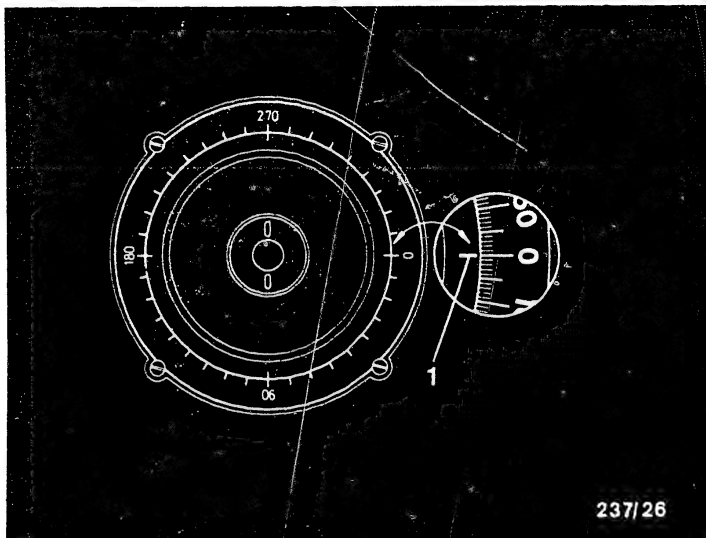


F6

Testing

Ignition distributors 0 237..., ZV-I





237/26

1 = Illuminated mark

9.2.1 Testing the vacuum advance

Switch on the 12 V power supply.

Drive the ignition distributor at a speed 200 min^{-1} above the end of centrifugal advance (see test specifications).

Turn the scale ring of the distributor test bench or the ignition distributor so that the illuminated mark of a cylinder lights up at $0^\circ/360^\circ$. See illustration.

Tighten locking screw of ignition distributor or clamping ring of chuck.

F7

Testing

Ignition distributors 0 237..., ZV-I



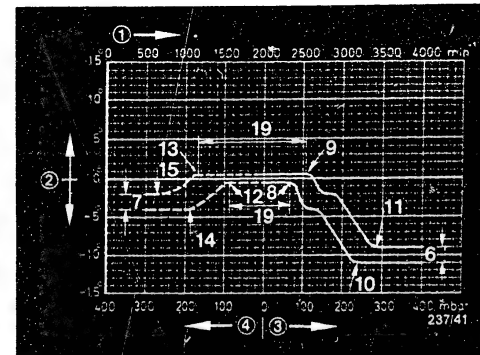
With increasing vacuum, check whether the advance angle is within the stated tolerance range. See figure for example.

If an addition to the tolerance range of $+ 0.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom. If the measured values are not within the tolerance range, check the vacuum advance system for freedom of movement.

After reaching the end of advance, an increase in the vacuum must not result in any further advance.

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there already to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at point 8/9.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 6 = Negative gauge pressure (vacuum) retard
- 7 = Gauge pressure retard
- 8/ 9, 12/13 = Start of vacuum/over-pressure advance with double retard
- 10/11, 14/15 = End of vacuum/over-pressure advance with double retard
- 19 = "Adjustment base"

F8

Testing

Ignition distributors 0 237 ..., ZV-I



F9

Testing

Ignition distributors 0 237 ..., ZV-I



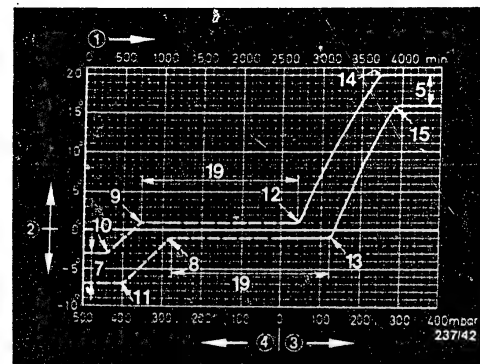
Further example of an advance curve, e.g. vacuum advance

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing vacuum, for there to be a slight advance (max. 0.5°) although the actual vacuum advance only starts at point 12 and 13.

Note:

The double unit with one connecting pipe advances when vacuum is applied to it and retards when overpressure is applied to it.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 5 = Negative gauge pressure (vacuum) advance
- 7 = Gauge pressure retard
- 8/ 9, 12/13 = Start of vacuum/overpressure advance with advance/retard
- 10/11, 14/15 = End of vacuum/overpressure advance with advance/retard
- 19 = "Adjustment base"

F10

Testing

Ignition distributors 0 237 ..., ZV-I

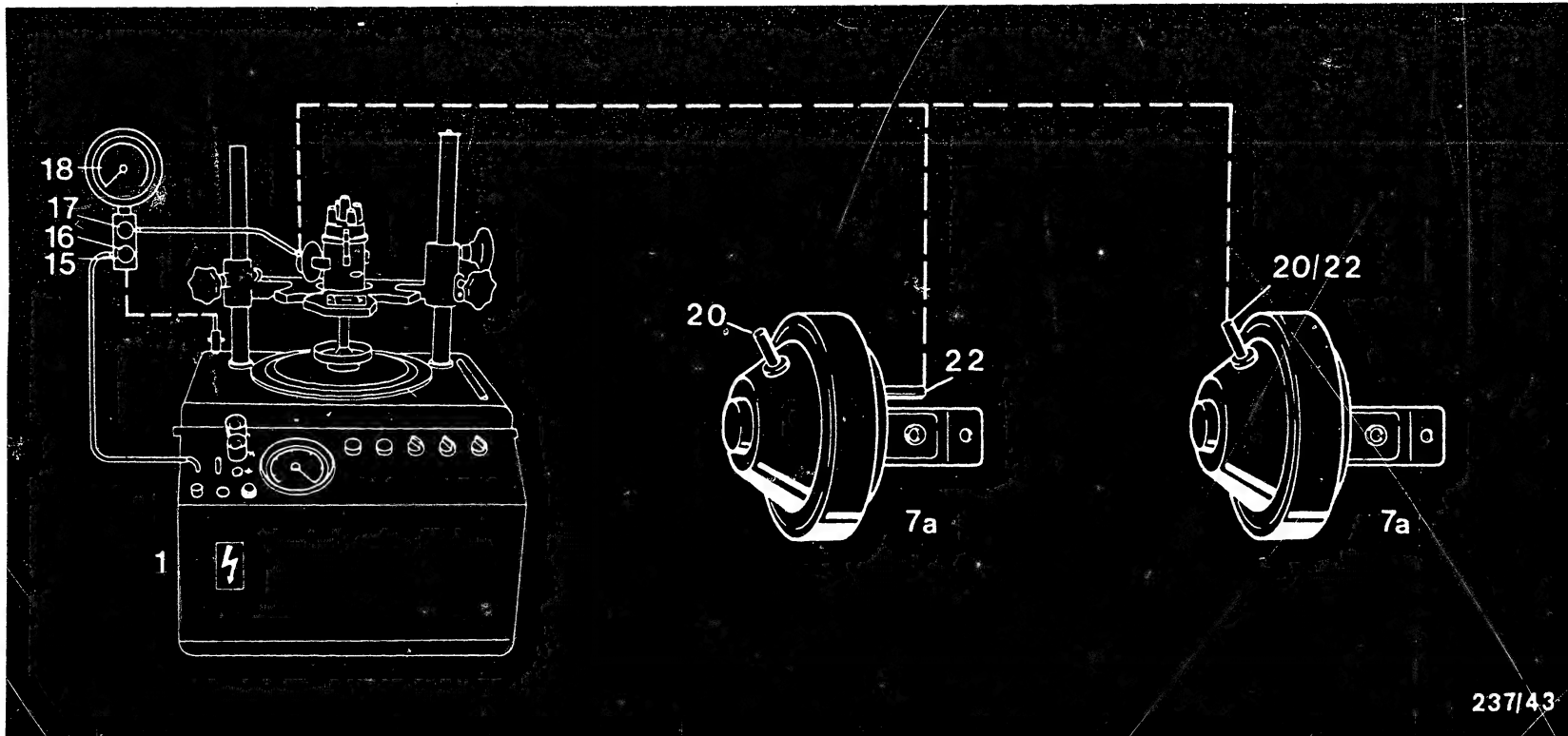


F11

Testing

Ignition distributors 0 237 ..., ZV-I





1 = Distributor test bench
 7a = Vacuum/overpressure unit
 15 = Adjustment throttle

16 = Adjusting screw
 17 = Screw plug
 18 = Pressure gauge

20 = Vacuum connection "retard"
 22 = Overpressure connection "retard"

9.2.2 Testing the overpressure advance

Connect the overpressure connection of the distributor test bench to the lower connection of the adjustment throttle. Connect the overpressure connection of the ignition distributor to the upper connection of the adjustment throttle. See connection diagram above.

Note: Adjusting screw (16) is for setting the pressure. If a pressure of 1.2 bar is not reached, then screw out the adjusting screw (16) and coat the thread with tough grease. Re-fit the adjusting screw (16). The screw plug (17) is open while testing.

F12

Testing

Ignition distributors 0 237..., ZV-I



F13

Testing

Ignition distributors 0 237..., ZV-I



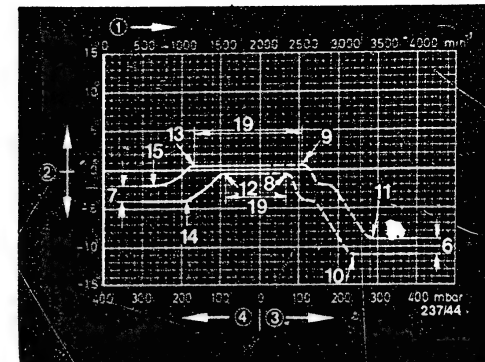
With increasing overpressure, check whether the advance angle is within the stated tolerance range. The figure for example.

If an addition to the tolerance range of $+ 0.5^\circ$ is given in the test specifications, the upper line must be extended by 0.5° to the top, and the lower line by 0.5° to the bottom. If the measured values are not within the tolerance range, check the vacuum advance system for freedom of movement.

After reaching the end of advance, an increase in the overpressure must not result in any further advance.

Advance curve with "adjustment base"

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing overpressure, for there already to be a slight advance (max. 0.5°) although the actual overpressure advance only starts at point 12/13.



- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure - (vacuum)
- 4 = Gauge pressure
- 6 = Negative gauge pressure (vacuum) retard
- 7 = Gauge pressure retard
- 8/ 9, 12/13 = Start of vacuum/overpressure advance with double retard
- 10/11, 14/15 = End of vacuum/overpressure advance with double retard
- 19 = "Adjustment base"

F14

Testing

Ignition distributors 0 237 ..., ZV-I



F15

Testing

Ignition distributors 0 237 ..., ZV-I

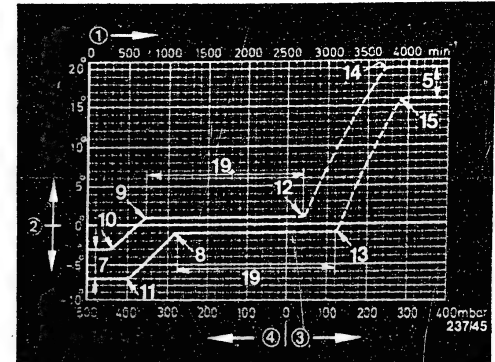


Further example of an advance curve - overpressure retard

Advance curve with "adjustment base" (19)

After the zero-point adjustment of the distributor test bench (scale ring) it is possible, with increasing overpressure, for there already to be a slight advance (max. 0.5°) although the actual overpressure advance only starts at point 8/9.

Note: The double unit with one connecting pipe advances when vacuum is applied to it and retards when overpressure is applied to it. Switch off the 12 V power supply.

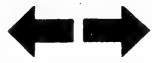


- 1 = Distributor-shaft speed
- 2 = Distributor-shaft advance
- 3 = Negative gauge pressure (vacuum)
- 4 = Gauge pressure
- 5 = Negative gauge pressure (vacuum) advance
- 7 = Gauge pressure retard
- 8/ 9, 12/13 = Start of vacuum/overpressure advance with advance/retard
- 10/11, 14/15 = End of vacuum/overpressure advance
- 19 = "Adjustment base"

F16

Testing

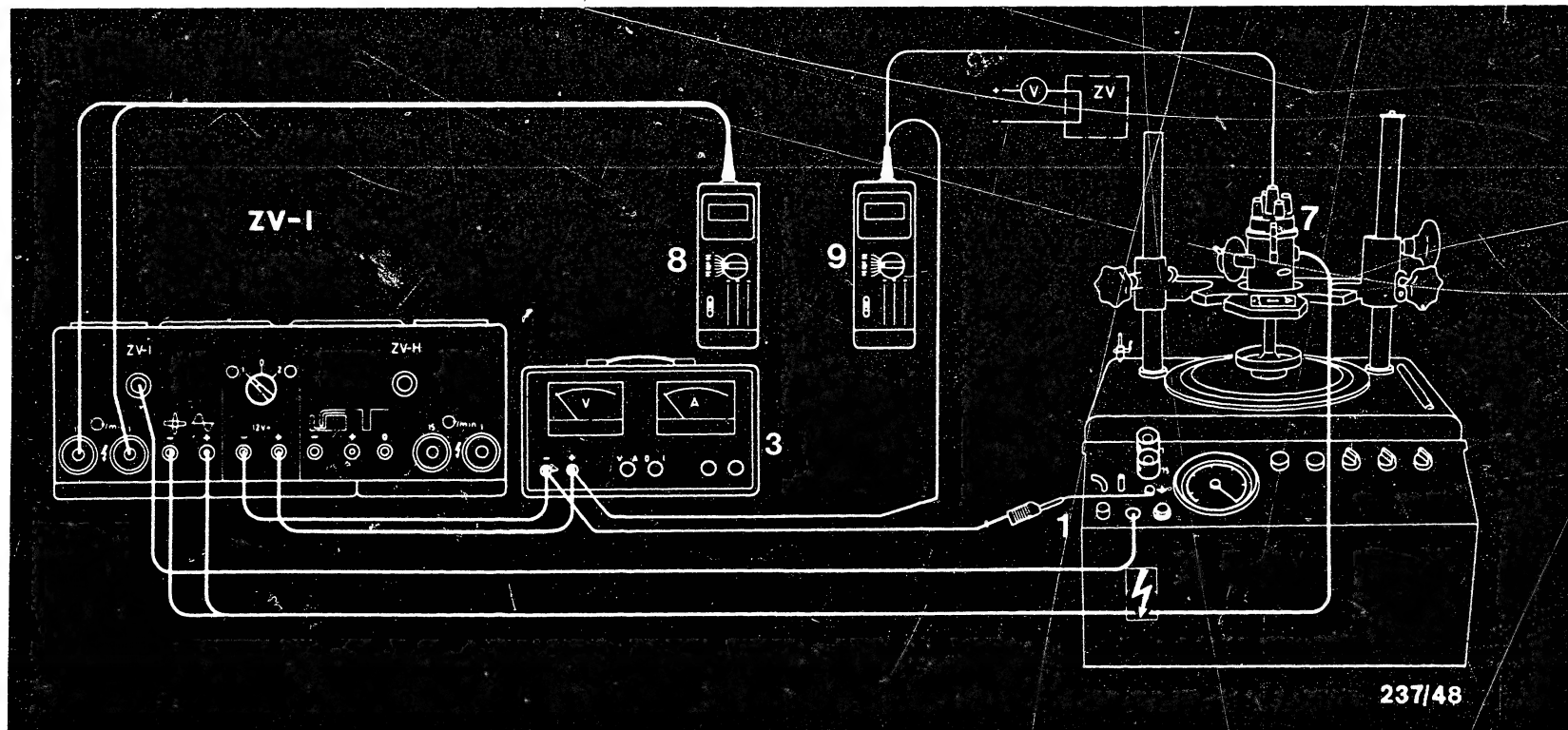
Ignition distributors 0 237 ..., ZV-I

**F17**

Testing

Ignition distributors 0 237 ..., ZV-I





- | | |
|-------------------------------------|--------------------------|
| 1 = Distributor test bench | 7 = Ignition distributor |
| 2 = Distributor test adapter (ZV-I) | 8 = Tachometer |
| 3 = Voltage stabilizer/battery | 9 = Voltmeter |

10. Testing the engine-speed limiter (test specifications VDT-W-237/1001...).

Mount the ignition distributor and connect to testers in accordance with the above terminal diagram. Follow the operating instructions of the individual testers.

Switch on the 12 V power supply.

Drive the ignition distributor at the specified speed.

The engine-speed limiter is O.K. if, up to the specified minimum speed, the voltmeter does not indicate voltage. However, it must indicate voltage no later than as of the specified maximum speed. Switch off the power supply.

F18

Testing
Ignition distributors 0 237..., ZV-I



F19

Testing
Ignition distributors 0 237..., ZV-I



11. List of test specifications with advance curves for breakerless ignition distributors 0 237..

The part numbers of the ignition distributors are arranged in ascending order. They are followed by the number of the corresponding microfiche with the coordinate number.

Part number of ignition distributor	As of FD	See microfiche W-237/	Coordinate
0 237 301 008		1001	G 23
011/012		1001	G 24
302 001	725→	1001	H 1
0C2		1001	H 2
003		1001	H 3
004		1001	H 4
005		1001	H 5
006		1001	H 6
008		1001	H 7
010		1001	H 8
011		1001	H 9
014		1001	H 10
015/016		1001	H 11
017/018		1001	H 12
019		1001	H 13
023		1001	H 14
024		1001	H 15
026		1001	H 16
027		1001	H 17
303 001		1001	H 18
304 001	725→	1001	H 19
002		1001	H 20
003		1001	H 21
004		1001	H 22

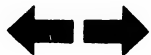


Part number of ignition distributor	As of FD	See microfiche W-237/	Coordinate
	005	1001	H 23
	006	1001	H 24
0 237 304	010	1001	I 1
	012/013	1001	I 2
	015	1001	I 3
	017	1001	I 4
	019	1001	I 5
305	001	1001	I 6
306	002	1001	I 7
	003	1001	I 8
	006/007	1001	I 9
	013	1001	I 10
	014	1001	I 11
	017/018	1001	I 12
	019/020	1001	I 13
	021/022	1001	I 14
	028/029	1001	I 15
	030/031	1001	I 16
	032/033	1001	I 17
	034/035	1001	I 18
	036	1001	I 19
	040	1001	I 20
	041	1001	I 21
	044	1001	I 22
	045/046	1001	I 23
	047	1001	I 24
401	007	1001	K 7
	008/009	1001	K 8
	010/011	1001	K 9
402	001	1001	K 10
	004	1001	K 11

H2

List of test specifications

Ignition distributors 0 237...,ZV-I



Part number of ignition dis- tributor	As of FD	See microfiche W-237/	Coordinate
006		1001	K 12
007		1001	K 13
007	624→	1001	K 14
008		1001	K 15
009		1001	K 16
016		1001	K 17
0 237 402 026		1001	K 18
405 023		1001	K 19

H3

List of test specifications

Ignition distributors 0 237...,ZV-I



Table of contents

<u>Section</u>	<u>Coordinate</u>
Microfiche layout	A 1
1. Test specifications	A 2
2. Test equipment and tools required for repair	A 3
2.1 Test equipment and tools required for testing	A 3
3. Lubricants	A 5
3.1 Lubrication table	A 5
4. Repairing the pulse generator	B 1
4.1 Determining the size	B 1
4.2 Removing the pulse generator	B 2
4.3 Installing the pulse generator	B 15
5. Repairing the pulse generator - short-type ignition distributors	C 1
5.1 Removing the pulse generator	C 1
5.2 Installing the pulse generator	C 16



Table of contentsCoordinatesSection

6. Testing	D 1
6.1 Test instructions	D 1
6.2 Visual examination	D 2
6.3 Testing the coil section	D 3
6.4 Testing for short circuit to ground in the coil section including electric lead	D 5
6.5 Testing the minimum air gap between teeth of trigger wheel and teeth of pulse generator	D 7
6.6 Testing the minimum voltage curve of pulse generator with normal polarity	D 9
6.7 Testing the minimum voltage curve of pulse generator with reversed polarity	D 19

*



Section

7. Testing the centrifugal advance	E 1
7.1 Testing ignition distributor with "zero point adjustment"	E 1
7.2 Testing ignition distributor with setting point in upper speed range - with/without coupled setting	E 7
7.3 Testing ignition distributor with reversed pulse generator polarity	E 15
8. Testing the vacuum advance mechanism	E 19
8.1 Testing the vacuum unit for leaks	E 19
8.2 Testing the vacuum advance	E 23
9. Testing the vacuum/overpressure advance mechanism - pressure unit with one or two connecting pipes	F 3
9.1 Testing the vacuum or overpressure unit for leaks	F 3
9.2 Testing the vacuum/overpressure advance	F 5



Table of contents (continued)

<u>Section</u>	<u>Coordinate</u>
9.2.1 Testing the vacuum advance	F 7
9.2.2 Testing the overpressure advance	F 12
10. Testing the engine-speed limiter	F 16

© 1983 Robert Bosch GmbH
Automotive Equipment - After-Sales Service
Department for Technical Publications KH/VDT,
Postfach 50, D-7000 Stuttgart 1.

Published by: After-Sales Service Department for Training and Technology (KH/VSK). Press date: 3.1983.
Please direct questions and comments concerning the contents to our authorized representative in your country. This publication is only for the use of the Bosch After-Sales Service Organisation, and may not be passed on to third parties without our consent.

Microfilmed in the Federal Republic of Germany. Microphotographié en République Fédérale d'Allemagne

